# Gleanings in Bee Culture

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# GLEANINGS IN BEE CULTURE

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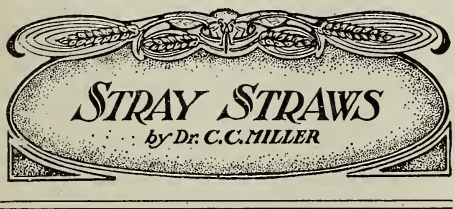


LAST WINTER was unusually warm, the coldest day being only 8 below zero; and the last week in March runs up to 70 or 80 degrees, day after day

G. M. DOOLITTLE advises against trying to raise queens before fruit-bloom. Not many beginners will follow that advice, but they will after enough years of experience. After trying a good many early-reared queens, first and last, I have come to the conclusion that the best thing to do with any queen that comes into the world before fruit-bloom, and perhaps even before clover, is to take off her head.

LIGHT FRAMES in a ten-frame body are mentioned as discouraging the queen from laying in extracting-combs, p. 490, top of second column. I puzzled some little time to think why a queen should object to light frames, and then it occurred to me that instead of "*light* frames" it should read "*eight* frames." [This is certainly a typographical error. It should have been *eight* frames, not *light* frames.—ED.]

E. W. ALEXANDER talks, p. 474, as if he wanted others to try two or more queens in a colony. I am afraid not many can try it unless he tells how to introduce them. I never had but one case of two unrelated queens in a colony—I think I reported that one case in GLEANINGS—and I'm not sure how they got there. A German bee-journal reported five or six queens in a colony, but I wasn't interested, and don't remember how it was done. Now that Mr. Alexander says that it prevents swarming I'm all interest, and anxiously waiting for further word from him.

BRO. A. I. ROOT, you seem to be trying to bull the market by advocating the eating of a lot of eggs, p. 497. But you can't persuade me, and yet we have plenty of eggs. Mrs. Miller brings in 25 to 29 a day. But I seldom eat one; I do better. I just drink 'em. Break an egg into a bowl, whip it well, add cream and sugar, pour in about a teacupful of hot coffee, fill up with hot water, and you have a drink fit for a king. That's what I have for breakfast every morning, and all I've had for breakfast for more than two years.

GLEANINGS for April 1 mailed March 23! What is this world coming to? [We will explain that we send Dr. Miller a copy of GLEANINGS hot from the press in order that he may have it in time to prepare his Straws for the issue following. We have no doubt our readers will appreciate the earlier mailing. But, notwithstanding GLEANINGS is practically finished a week ahead of time, it is doubtful if many of our subscribers, owing to our rapidly growing subscription-list, will get their journals much earlier than usual.—ED.]

C. P. DADANT thinks less than two per cent of colonies in progressive apiaries are in shallow hives, p. 485. A curious thing about the Heddon hive is that more seems to be said in its favor in Australia and Canada than in this country. [We doubt if the estimate of two per cent for colonies in shallow hives is anywhere near high enough. In our travels over the country we find the shallow-hive or divisible-brood-chamber men feel that they are out of the orthodox channel of bee culture, and therefore do not say any thing about the hive they use. The correspondence in this office of late seems to indicate that the percentage of shallow-hive men, and those who use divisible brood-

chambers, compared with all the rest, would be considerably in excess of two per cent, but how much higher we would not venture to say. But every day we are surprised to find how many there are who use divisible-brood-chamber hives.—ED.]

IN MY TIME I have smoked bees on taking from the cellar, or shut the entrance with a cloth wringing wet, but I think it isn't often necessary. This year Philo carried them out with never a wet rag, nor a puff of smoke. It took him five hours to take out the 166, placing them at an average distance of seven or eight rods from the cellar. Temperature in cellar at beginning was 52, rising to 66 at close. Some bees flew out at the outer cellar door, but gradually disappeared, going, I suppose, into some of the hives. An important factor was that the cellar had been wide open the night before.

SOFT MAPLES bloomed March 21, with thermometer at 75, but I was away and did not get the bees out of the cellar until March 23, with highest thermometer at 78. Only four of the 170 were dead; and the curious thing about them was that, while there was plenty of honey, they were clean of bees, combs, bottom-board, and all, and I am puzzled to know whether the bees deserted them before they were carried into the cellar or after. [We are having unprecedentedly warm weather here for March, and we are fearful that old Dame Nature will make up by giving us a cold spell that will kill the brood later on.—ED.]

LAST FALL I tried to give my bees enough honey so there would be no question about their weight this spring. But for fear of some oversight I "hefted" them all to-day, March 25. I lifted very few indeed from their stands. When I pulled on a hive to the amount of about 40 pounds, if it didn't come up I let it stay down. What's the use of breaking my back lifting an extra 10 or 20 pounds when I know the hive is more than heavy enough? If it raised from the stand with what I thought was a 40-pound lift, I weighed it. If it weighed less than 38 pounds I opened it. There were only five to open, and they didn't need honey.

THE EFFORT to secure an anti-spraying law in Illinois will probably turn out a failure on account of the opposition of fruit-men. They say they can not get through spraying in time unless they begin at least a little before the blossoms fall. It is just possible that the fruit-men may gain by this; but I don't believe that their gain will be as great as the loss to the neighboring bee-keepers. [The trouble in Illinois is that you have a large manufacturer of spraying-outfits who has for years been sending out literature broadcast, advising fruit-men to spray during fruit-bloom. So persistently has this advertising matter been sent out that your fruit-growers have come to be permeated by the idea. Mr. Sprayingoutfitman has been labored with, and been informed that all the experiment stations in the country advise against spraying while trees are in bloom. But he insists he is right; and the last we knew of him he was still sending out spraying-in-bloom literature with his spraying-outfits.—ED.]

J. A. GREEN thinks no foundation heavier than "extra thin" should be used in sections, p. 468. Possibly, possibly. I have used no extra thin for many years, although using full sheets, and have had no complaint. Here the harvest has a way of letting up now and then, even in the best years, and at such times the bees have an unpleasant way of digging down extra thin foundation. Besides, extra thin doesn't do so well for bottom-starters, and I can't afford to do without them. [Our records in our foundation department show that there is two pounds of thin to one of extra thin super foundation used by the comb-honey producers of the country. So, doctor, you are not in the minority. To the ordinary consumer the difference between a comb of honey built off from thin and extra thin is not apparent. It is the discriminating bee-keeper, however, who notices the difference.—ED.]

E. D. TOWNSEND, in *Review*, springs an idea worth thinking about: In a heavy flow honey stored in very deep cells will not be of so good *quality*. So he favors extracting-frames with ⅞ top-bars and end-bars, spaced 1⅜ in., and then when uncapping he cuts down to the wood, leaving a ⅞ comb to return to the bees. [Mr. Townsend is correct; and the same principle applies to comb honey. A tall section with a large amount of surface, theoretically at least, will have better-ripened honey than the same weight of comb square in form but thicker; or, in other words, a 4×5 1⅞ plain section having a thinner comb than a 1½ square section of the same weight should have a slightly better honey. While the actual difference is *very small*, yet if there is a difference it may be the proverbial straw that breaks the camel's back in favor of sections with thinner combs of larger surface.—ED.]


COMPLAINT has reached this office from some of our subscribers, of the non-receipt of certain issues of GLEANINGS, and in some cases numbers so badly mutilated that even whole pages were missing. Uncle Sam's mail clerks are none too careful, as every publisher knows to his sorrow. We are making preparations to mail GLEANINGS in flat packages more securely wrapped, and trust hereafter the numbers will be received in better condition. We will gladly replace any missing or mutilated numbers on receipt of a postal card advising us to that effect.

### TARIFF INCREASED ON HONEY IN EUROPE.

Both Germany and France have recently raised their tariffs considerably in the interest of agriculture. The raise applies to honey. The Canadians have also decided on a pretty stiff tariff, on both honey and beeswax. In this country beeswax is free, and the duty on honey is not high—20 cents per gallon, which is not high enough to prevent good honey from coming here. The increase in the European tariffs may divert some Cuban and other West Indian honeys into the American markets. If so, it may affect adversely the market for the bee-keeper and honey-producer in this country, for manufacturing purposes; but we haven't much to fear from Cuban honey this year, as there is not much in sight.

### THE ALMOST UNPRECEDENTEDLY WARM DAYS IN MARCH.

According to the weather reports, the 22d and 23d of last month were the warmest for March that has been known since 1871. At this writing, the 26th, it continues warm. In our locality, prematurely warm weather starts excessive brood-rearing, and then when a cold spell comes on for a number of days (as it is almost sure to do), the effort of the bees to cover this brood results not only in loss of the brood, but of many of the bees, inducing what we generally call spring dwindling. If we could control the weather we would have one or two good flight days early in the spring, then have it cold enough to keep brood-rearing back until natural at the proper season.

*Later.*—A cold spell came on, but it didn't last long. Indications go to show that this will be an early spring for the central States at least.

### HOW THE NATIONAL PURE-FOOD LAW IS WORKING; SOME HEAVY FINES THAT HAVE BEEN PAID.

The pure-food law is already proving a terror to evil-doers. As illustrating this, we may mention a case recently reported in the press, of a company which has a plant in Vermont, but sells its goods in Boston. It is alleged its officers pleaded guilty in a federal court to four indictments, charging them with having in their possession diseased meat intended for sale. The indictments contained 400 counts, to 34 of which, it is said, the company pleaded guilty, and that they were compelled to pay a fine of $3000 and costs.

Under the old dispensation this concern would probably have evaded the law because they prepared the goods in one State and sold in another; or had they been haled before a ocal State court they would have been let off with a small fine, or none at all, for it frequently happens that concerns of this kind can bring local sentiment to bear, and the case is allowed to die. We want to have only a few cases of this kind with regard to honey-mixing to put a complete stop to the adulteration.

Perhaps the greatest temptation at present is to substitute paraffine for beeswax in the manufacture of candy, also in druggists' supplies. These people hate to pay 33 cents per lb. for beeswax.

### SACCHARIN RULED OUT IN FAVOR OF SUGAR, AND POSSIBLY HONEY, FOR CANNING PURPOSES.

It is stated in press despatches that the Ohio State Food Commissioner has barred the use of saccharin in canned goods, and will allow no sweetening other than good plain sugar. It is claimed the canners had been using saccharin, which is 500 times sweeter than sugar, and that it was harmless; but from the information we possess it is far from being so. On the contrary, it has been proved to be a rank poison in some cases, and the Ohio commissioner is amply justified in his ruling. We doubt very much, however, if he can compel the canners to use nothing but sugar, for honey stands on even a higher plane than sugar; and the very finest preserves made in Europe to-day are sweetened and preserved with honey—a fact which should be better known in the United States,

### WHY THE BEES CLUSTERED OUT IN FRONT OF THE ASPINWALL HIVE.

Mr. L. A. Aspinwall, referring to the crowding of the bees out of the front of the Aspinwall hives, as illustrated on page 399, draws attention to the fact that the photos show that the slotted dividers or dummies were not in the hive at the time the pictures were taken. For that reason the bees would crowd out of the entrance as they would from any hive under precisely the same condition. If the dummies had been alternated between the frames, the bees would have all been in the hive. In talking with our neighbor Vernon Burt this morning he said he had removed the dummies after the season was over, and that it was a fact that, while the slotted dividers were between the frames, the bees remained wholly within the hive, no matter how hot the day. He reports that this Aspinwall colony this spring is a rousing big one; and he says if the dividers and the general construction effectually stop swarming he will get a big crop of honey from the hive.

### BEES POISONED FROM SPRAYING WHILE IN BLOOM.

About this time of the year some bee-keepers will find a rapid decimation of the bees in their colonies, in localities where ignorant farmers or orchardists are spraying while fruit-trees are in bloom. There is no question about the spraying-liquids killing the bees by the thousands, for reports of it begin to pour in every year after the blooming season is over, and we shall expect it this year unless bee-keepers get busy. Our friends should take the matter up with the fruit-growers without unnecessary delay, and, if possible, get them to do their spraying just before or soon after blooming. Experiment

stations over the country are all agreed that no good (but generally harm) is done by spraying while the bees are gathering pollen and nectar from the blossoms. Show Mr. Fruitman that, from *his own standpoint* of fruit production, he can not afford to injure the blossoms when the organs are in such a delicate state.

This is an old matter that we have to bring up every year; and where there are no laws against spraying in blooming time our friends will have to use moral suasion, and such suasion should be reinforced with five or ten pounds of choice honey. The strongest argument that a bee-man can use is to "sweeten" his neighbor into being good.

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### MAETERLINCK NOT AN AUTHORITY ON APICULTURE.

THE editor of the *Pacific Rural Press* asks the question, "Can it be possible the great Maurice Maeterlinck has made a mistake?" He refers to the statement in *Harper's Magazine* for March, in which he states, "Transported to Australia or California, our black bee completely alters her habits. After one or two years, finding that summer is perpetual, and flowers for ever abundant, she will live from day to day, content to gather the honey and pollen indispensable for the day's consumption, and, her recent and thoughtful observation triumphing over hereditary experience, she will cease to make provision for her winter."

All we need to say is, Maeterlinck is somewhat of a romancer when he writes about bees; that is to say, he indulges in a good deal of poetic license at times. His book on bees, from a literary standpoint, is unsurpassed, and is worth reading; but the author does not claim to be a practical authority.

Another writer, who posed for a long time as an authority on bees, is Sir John Lubbock (now Lord Avebury), when, as a matter of fact, his knowledge of bees was very small—not equal to that of most bee-keepers.

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### TOO MUCH RAIN IN CALIFORNIA; HONEY CROP THERE PUT IN JEOPARDY.

THE following, from a correspondent in Central California, would seem to indicate that what promised, earlier in the season, to insure a honey crop (the rains), may prove too much of a good thing, and ruin all chances. California may not, therefore, be able to send any honey eastward after all; if so, the markets will be firmer. Here is the letter:

It is still raining in Central California, where there are unprecedented floods and inundations, and stoppage of traffic in many places. Generally over California this has been the heaviest winter the State has had in forty years. No one can predict at present what the ultimate effect will be of such a long *rainy* season. All lines of agriculture are demoralized, and a complete change must be made in cropping. Lands that should now be producing are either completely under water or are too wet even to seed. The apiarist in many localities is similarly upset in all his bee-work. Where nectar should be coming in, it is simply being washed away by continuous rains. Around San Francisco we have had but a day or two of sunshine at a time for three months. Snow has fallen here once—about a year ago—a very rare occurrence. The honey crop will certainly be a light one.

In the southern (or dry) counties it may prove to be a record year yet, but all depends on the weather when the flowers are in full bloom. In the central counties, or those around San Francisco Bay, we predict a late and very small flow of honey.

San Francisco, Cal., March 25. SOJOURNER.

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### CAN COMBS ON WHICH BEES HAVE DIED DURING WINTER BE GIVEN TO HEALTHY BEES IN THE SPRING?

EVERY year about this time a good many inquire whether it would be safe to put live bees on combs from which bees have died. We should have no hesitation whatever if they are not badly soiled with dysentery stains; and there would be no danger even then after settled warm weather comes on. Even if the stores were so inferior as to be responsible for the death of the colony during winter, such stores would probably do no harm to bees that are permitted to have a flight one or two days in a week in early spring. Combs very badly soiled with dysentery should be set aside and not used until the bees can fly every day; and even then we would not give more than one to a colony at a time. If they are well sealed and badly spotted with dysentery, a bee-brush dipped in water should be used to clean them up before giving them to the bees.

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### MALTED HONEY.

WE have been favored with a jar of malted honey put up by Dr. Hamilton T. Mason, of Wenonah, N. J., evidently with a view to getting our opinion of its merits. Some, perhaps, would not care for it, as the malt gives it a sort of burnt flavor which is not appreciated by most lovers of good honey; and it is an open question with us whether any thing can be done to improve honey in any way. But it is well known that honey does not agree with every person, particularly with some whose digestion is so poor that food sours or ferments in their stomach. We know the digestion of food is promoted by certain enzymes, or ferments; and the addition of malt to a food is supposed to take the place of these in weak stomachs where the proper ferment is not present, and because of the lack of which an uncomfortable and oppressive feeling after eating is experienced. Our strenuous, exciting mode of life produces many cases of this sort, and for them malted honey may prove a blessing.

It may be observed the consumption of malted honey will lead to the partaking of ordinary honey, and at present malted foods are quite fashionable. Malting the honey, by the way, is a preventive of granulation, and this feature may be valuable.

It should be understood that malt itself is not an alcohol, and its use to change certain foods to make them more easily assimilated in no way induces alcoholism, although the ferment may be used, as in the manufacture of beer, to make an intoxicating drink. The

policy of this journal always has been (and we hope always will be) against the drink-traffic in any form.

### INDIANA WITH ITS PURE-FOOD LAW; PURE-FOOD LAWS IN OTHER STATES.

INDIANA has joined the great procession, and passed a pure-food law which is now in force, though it had resisted all efforts for the past ten years to get a pure-food law on the statute-books. An appropriation of $15,000 was passed to put the law in working order, and there is a provision for coöperation with the officers of the United States Department of Agriculture, as the Indiana law is identical with the national. Quite a number of States are about to pass similar laws, or have already passed them. New York, which now has a very effective law, will probably pass a law to conform with the national one, and Pennsylvania has one before the legislature, which is strongly supported by the Wholesale and Retail Grocers' Association. The idea in these cases is to avoid the clashing of the State and national laws, and, as a rule, the adulterators can hire plenty of lawyers. Similar laws are expected in New Jersey and Maryland, so that by the end of the year, all the States, with the exception, possibly, of some in the South, will have pure-food laws in operation. Our southern friends ought to endeavor to interest their representatives in this matter, for it would put our country in the fore front of all nations in regard to the quality of our goods, and it is well known we lead them all in quantity.

No great nation has yet dared to put into operation so drastic and far-reaching a pure-food law. Of course, it would be good policy for all bee-keepers to attempt to improve on the quality of their product, eliminating all thin and discolored honey from the market, and, as far as possible, turn out a fancy product, for there is a strong demand all along the line for strictly fancy goods.

### SELLING HONEY.

IT will be noted by this time that GLEANINGS is devoting more space to the problems connected with the sale of honey. Our reason for doing so is that the time has now come to make a vigorous effort to turn the trend of honey prices upward, and we wish to furnish our readers with all the information available that they may join in a crusade for higher prices. The national pure-food law gives us the powerful assistance of Uncle Sam. It seems to us *now* is the accepted time to raise prices, and it is our wish to stiffen the back-bone of the bee-keeper so that he will positively refuse to sell at the extremely low prices which formerly prevailed. We wish, also, to furnish our readers with facts and figures about honey and its intrinsic value, which will enable them to explain to consumers the superlative quality of honey as a food. Perhaps it would be well for bee-keepers who sell locally to furnish their local newspapers with items taken from GLEANINGS from time to time; and if the publisher is favored with an advertisement it is very probable these items will be inserted. We wish that every bee-keeper would exert his influence in having the truth about honey published. To succeed we must convince the public that honey is not surpassed by any food known. We have right on our side. We also have the law on our side. If you disagree with us we should be glad to hear from you.

### GLEANINGS AND THE REFORMED SPELLING.

THE following letter, received from one of our subscribers, will explain itself:

*Dear Mr. Root:*—Editorial references in recent issues of GLEANINGS to "reformed spelling" prompt me to suggest:

1. That you are too modest by half. GLEANINGS is just as "big" and "influential" in its class as the *Literary Digest* is in its chosen field, if not more so. Why not lend your influence, so far as it goes, be it much or little?

2. The movement is not new. Changes and modifications of the original spellings have been silently but steadily going on for a hundred years or more, and the present agitation dates back a quarter of a century. In 1883 the American Philological Association and the English Philological Society recommended, as a convenient basis, 3500 amended spellings. These are recorded in the Century, the Webster International, and the Standard dictionaries. For more definite work, 12 of these simplified forms were, in 1898, approved and adopted by our National Education Association, and have since been used by it in all its publications. This list has been extended to cover about 300 words in common use, many of which have dual spellings, thereby forcing a choice "whether or no." Hence in adopting, to a greater or less extent, this list GLEANINGS would not be a pioneer blazing a trail through an unexplored country.

3. You would not be lonesome nor considered eccentric. The Simplified-spelling Board, which is responsible for the present agitation, is composed of some of the most eminent men of letters in this country and England. More than 15,000 persons have signed a promise to use the simplified spellings recommended by the board—among them 4000 teachers in universities and colleges, presidents of universities and colleges, superintendents of schools, and a great number of lawyers, clergymen, physicians, scientists, journalists, and other professional men and leaders in every walk of life. About 150 periodicals—many of them with national circulation—are now using simplified spelling, some far in advance of the tentative "three hundred words." More than 2000 firms and corporations are doing the same thing, both in correspondence and advertisements. The literature of some of these concerns penetrates every quarter of the civilized world. Lonesome? Not a bit of it. You would have an abundance of the very best company, and the procession is growing larger every day.

In view of these facts, and many more which might be cited, can you afford to have your enviable reputation as a leader marred by allowing the printed product of your skill to be a "mossback" orthographically speaking?

Minneapolis, Minn., March 13. W. S. WINGATE.

There is a good deal of truth in what you say. While it is true that GLEANINGS is by no means small, nor without influence *in its class*, yet its chosen field is comparatively small when put against the chosen field of the *Literary Digest*. A literary paper, or one popular in its general nature and character, could wield a mighty influence because of the magnitude of its field. There are probably not over 500,000 bee-keepers all told in the United States, and not a tenth of these take a bee-journal. Suppose we make it 40,000. Their influence would be small in comparison with the mighty clientage of the magazine and newspaper readers. Under-

stand that we are heartily in sympathy with the reform spelling; and if we had a club big enough to help lop off a lot of the silent and other letters of the wrong sound now considered necessary in our outrageous orthography we would use it most vigorously. We have already adopted a few short forms; but these are so few and far between that the average reader, probably, will not notice them. We may adopt others little by little. If a few more papers like the *Literary Digest*, the *Independent*, and other papers of that class, would help blaze the way, we should be glad to follow. As it is, we are very sorry that Congress stopped President Roosevelt from using the shortened spelling in printing government bulletins. We should soon have become accustomed to the shorter spellings, even though at first they seem odd. In the mean time we thank our subscriber for his boost in the right direction. The effort may not be amiss.

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THE RAGE NOW ON FOR PURE-FOOD LAWS IN MANY STATES; WHAT STATES HAVE ALREADY ENACTED THEM, AND OTHERS THAT ARE TRYING TO GET IN LINE.

PURE-FOOD laws are being passed so thick and fast it is rather difficult to keep track of all that is being done, for some States which all along have had such a law on their statute-books are now amending them to conform to the national law. Others have had laws, but for some reason or other they were dead letters.

Tennessee, for example, had a law, but provided no funds for its enforcement. An effort is now being made to get the necessary amount voted by the legislature of that State to secure its enforcement; and our readers in that State ought to get busy at *once*.

The Southern States have long been the dumping-ground for all kinds of adulterated and impure foods, and it is to be hoped efforts will be successful in getting all these States in line.

In Idaho the pure-food law did not get a hearing before the legislature adjourned; but the bee-keepers of that State can easily revive it again next session.

In Pennsylvania the Tustin law is before the legislature; and in New York, Mr. Oliver, in the Assembly, and Mr. Frawley, in the Senate, have charge of the new pure-food law which brings the New York statute in line with the national law.

In Nebraska, the pure-food law is in the care of Senator McKassan, and stands a good chance of being enacted; but it would be a good thing if our friends were to write to their representatives, stating their views on this matter.

In West Virginia a pure-food measure is up before the legislature and ought to pass.

Vermont, New Hampshire, Massachusetts, Indiana, Missouri, Iowa, Colorado, Arkansas, Ohio, North Dakota, Minnesota, Wisconsin, Michigan, Illinois, Kansas, are already in line, so that it looks now as if there would be hardly a State left out, and there should not be.

We have not heard from California as yet; but the bee-keepers of that State ought to pull hard to get the law enacted, as the honey from that State has suffered very much from adulteration after it left there. In future, when California honey is sold in the East it will be California honey unless Uncle Sam falls asleep, which is not at all likely; on the contrary, we expect to see more stringent laws enacted as the years go by.

There are no sulphites, salts of tin, ptomaines, formalin, sulphurous acid, nor hydrochloric acid in honey, hence we have nothing to fear from any law; but our competitors in the sugar and the glucose line have much to fear.

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BACILLUS ALVEI NOT THE CAUSE OF ORDINARY FOUL BROOD, ACCORDING TO GERMAN SCIENTISTS.

THE following editorial in the *British Bee Journal* for March 14, page 101, is somewhat startling in its announcements—not so startling, either, since the Imperial Biological Institute's findings go a long way to confirm the work of our own Dr. White, formerly of Cornell University, and later of the Department of Agriculture, Washington. First, the Institute agrees with Dr. White that *Bacilus alvei* is not the cause of foul brood, since, of the 112 samples of foul brood examined, only 13 contained *Bacillus alvei*. Well, the editorial from our careful and conservative contemporary speaks of it as follows:

A report has just been issued of the investigations made during 1905 in the Imperial Biological Institute of Dahlem, near Berlin. In this report Nos. 24 and 25 are of special interest to bee-keepers, as they treat of the experiments made on diseases of brood. The first treats of foul brood of bees, and the last of what has been called "Aspergillusmykose" of bees.

The Institute received 119 samples of the diseased brood, and 112 of them were found to be foul brood. It is stated that bee-keepers suppose that *Bacillus alvei* is the prime cause of foul brood. The investigations of the Institute tend to show that this is not absolutely correct, and that other bacteria play an important part in the development of the disease. In other words, of the 112 samples of foul brood examined, *Bacillus alvei* was found in only thirteen, or, in round numbers, in one sample out of every nine. This unexpected result gave cause for considerable reflection and experiment. Food containing the bacilli mentioned above was given to healthy colonies, and foul brood failed to break out; nor was any effect produced when bacilli were brought in direct contact with the larvæ and nymphs in the cells.

From this it would appear that *Bacillus alvei* is of less importance than has hitherto been attached to it. Not only so, but in every case of foul brood another microbe has been found, sometimes in company with *Bacillus alvei;* but all attempts to produce the disease with it failed; therefore it can not be considered as playing any part in its production.

In continuing the investigations a different microbe, a *Spirochæte* belonging to an altogether different family of the higher bacteria, was found. It is spiral in form, is not motile, and appeared in all samples of foul brood as well as in the dried masses and scales, even when these were several years old.

According to the report, the researches were to be continued during 1906, and it will be interesting to know if this hitherto unknown organism has any thing to do with the disease causing so much damage to the bee-industry. In any case the results tend to show that *Bacillus alvei* is not the real cause of foul brood, and, when present, plays only a subordinate part.

No. 25 treats of what Germans call "Steinbrut," or mummified brood. In this disease the brood becomes hardened and brittle, and, what is more important, adult bees are also affected. It is due to a microbe caled *Aspergillus flavus*, found in abundance in the affected brood and also on the hairs of adult bees. Inoculation experiments on rabbits and fowls not only produce the disease but cause their death; from which it is inferred that this microbe is the true cause of the disease in question. We would, however, point out that too much reliance should not be placed on this, as we know that *Aspergillis flavus* is parthogenic in rabbits, whereas it is saprophytic in man. The disease seems to be epidemic in some districts of Germany.

Dr. Moore and Dr. White were the first to discover that *Bacillus alvei* was not the cause of foul brood, but the direct cause of black brood. In only one respect do the investigations of the Imperial Institute differ from the findings of these men; and that is regarding the cause of foul brood—the common kind that seems to be so prevalent in Europe and this country. The Institute lays the cause to a *Spirochæte* belonging to an altogether different family of the higher bacteria that appeared in all the samples of foul brood, as well as in all the dried masses and scales. Dr. White, on the other hand, attributed the cause to *Bacillus larvæ*. It remains to be seen which of these two authorities is right on this proposition. The fact that Dr. White was the first to show that we have been laboring under a wrong impression as to the cause of foul brood, entitles his opinions and findings to a greater degree of respect than ever. That his discoveries are being confirmed in part, at least, by so high German authority is a distinct tribute to his skill, and we incline to the opinion that this same authority will find that he has also discovered the microbe responsible for the old-fashioned foul brood.

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### THE PRICE OF HONEY NOT KEEPING PACE WITH OTHER COMMODITIES; THE FOOD VALUE OF HONEY.

Some maintain the present low prices of honey are permanent, and others think the salvation of the honey-producer is more bees to produce more honey. In other words he must cut a stick to beat himself with. It can not be disputed that honey in Europe sells for more than it does in this country; and the consumption of it in Europe is not small by any means, so that it can not be stated the higher prices keep the consumer from buying. On the contrary, low prices tend to create an impression that the article offered is not what it is represented to be. No one requires more than a small amount of honey at a meal, hence there is no need to sell it at low prices. It is a concentrated food of high feeding value. Intrinsically it is much more valuable than butter, yet it sells for considerably less. Why so? Honey possesses a richer flavor than butter, has a greater life-sustaining power, and keeps indefinitely; whereas butter keeps but a few days or weeks. At one time in this country comb honey sold for more money than butter; but that was before glucose came this way. Doolittle once sold his comb honey for 28 cents per lb. section, wholesale. He could not do it now, though the ability of the consumers to purchase is far greater than it was then. The same people are now paying nearly twice as much for their butter as they did then. What is the reason for the change? Partly lack of confidence, and partly because honey is not a staple like butter. People, as a rule, want pure foods, even when their cash is short; but the trouble with honey up to and including Dec. 31, 1906, was that the public did not have confidence in its purity. The general impression was that honey on the market was, in the main, adulterated. One can hardly blame them for their opinions, for they realized adulteration was very common, and were nervous about it. They thought, too, that the bee-keeper was as likely as anybody else to be dishonest.

The situation has changed considerably for the better; but the effect of continual and reiterated misrepresentation will long remain to create an unfavorable opinion of honey in the minds of many consumers in this country.

To restore confidence, bee-keepers will have to get behind the national pure-food law and conduct a lively campaign of education. The American people are eagerly reading every thing relating to pure food. They are even now willing to listen to the bee-keeper's side of the honey question. They want to know what he has to say about his products, honey and wax. If he says they are pure they are willing to believe, knowing, as they do, that Uncle Sam to a certain extent looks after that. Granting that honey is pure, they want to know how honey must be used and what it is good for. They ought to be informed all about its value as a food and medicine. For the first time in history we see a nation thoroughly aroused to the paramount importance of pure food properly used. Within the next few years, books and papers about food will appear in great numbers on account of the eager desire for information on the part of the people everywhere.

### THE TERRIFIC DEATH-RATE OF CHILDREN DUE TO BAD FOOD.

Why all this *furore* about food? Why not let people do as they have always done—look out each one for himself? The reason we think for the change is this: Women in this country have been receiving a superior education for a generation back, and they have gradually come to learn of the terrific death-rate of children, and the causes of that holocaust of babies. They have found that bad food and bad hygienic conditions were responsible for half the death-rate in the children at least. This aroused mothers everywhere, and they in turn have created a sentiment which demanded pure-food legislation.

Now, it must be admitted that honey is largely a food for children—a fact that is usually lost sight of by many bee-keepers who deal directly with consumers or by writers on the subject. We must convince the American mothers that honey is the best sweet for children. If we succeed, there need be no worry about the sale of honey.


### KEEPING HONEY IN CELLAR.

Yes, Dr. Miller, there is always some secret in connection with keeping honey safely in a cellar. Some years ago, while spending a day in company with Frank Benton and the late Dr. Mason at the home of Mr. Herman Rauchfuss, of Denver, Colo., some beautiful alfalfa comb honey was served at the table. This, Mr. Rauchfuss told me, he had kept in his cellar over the season to keep it from candying, and it was in as fine condition as could be. The secret in this case was that the cellar was *warm and dry*, together with the dry weather conditions outside during the time. I think we are about right in believing that the average cellar is a poor place to keep honey, and should be condemned, at least for beginners and those of lesser experience. Most of the cellars are cool and more or less damp, hence not at all adapted for keeping honey in them.

### CLEANING SUPERS OF PROPOLIS.

"*When the mercury stands at from ten to twenty degrees above zero,* wearing overcoat and mittens to keep warm if necessary," G. M. Doolittle instructs us, p. 313, supers should be cleaned of propolis, using an old chisel with its edges ground square and sharp. This leaves us "Southerners" wondering how often we'd get a chance to clean our supers. The mercury in our thermometers does not *often* go so far down; and if it should we'd be hugging the stove "to keep warm if necessary." But does it really take weather so cold as that to make propolis "fly"? A tool with sharp square edges is a good one for the purpose. I have been using, and prefer, a tool made of a thin piece of steel about 5 inches long, from a thick saw-blade inserted in a short stout wooden handle. The blade should be about 4 inches wide, with edges filed perfectly square. This is best done by laying the file flat on top of the edge of the blade, lengthwise, and holding the file level while filing. Such a scraping-tool, resembling a huge stout putty-knife, can be used with much force, and makes propolis fly on cool days. Besides, such a tool can be used as a hive-tool and for many other purposes. It is excellent for opening hives and prying apart supers, etc., and can be conveniently carried in the hip pocket.

### THOSE BEE-SPACES IN DIVISIBLE HIVES.

Even authorities differ in regard to the objections that have been mentioned about the space between sections of divisible-brood-chamber hives interfering with the laying of the queen. While Dr. Miller, page 307, does not believe that objection valid, C. P. Dadant, on page 316, gives some facts to show that a sectional frame interrupts the laying of the queen in many instances. Although it is difficult to deny these facts so plainly pointed out, it is a puzzle to me why my divisible-brood-chamber colonies are as strong in every respect as any colonies on solid deep combs—not only of the L. depth but the Jumbo size, which is exactly the size of hive the Dadants use.

Another factor I have often found is that many colonies in box hives are real "whoppers" as regards strength in bees, while their combs may be ever so "divisible," cut up into all kinds of crooked pieces, the most of them no larger than a man's hand. I have recently been at the outyards and found the bees in divisible hives in the best condition, with brood in several sections of each hive. The many advantages that such hives possess over others, for me, are so great that, even if the queens were hindered by the space between the sections, I could still well afford to use them profitably.

### CACTI AS HONEY-PLANTS.

The "prickly pear," the common name for our large-leafed cacti (*Opuntia engelmanni* Palm.), is sometimes of much importance to the bee-keeper, especially during a season of partial drouth. Several years ago a late "cold snap" destroyed various kinds of bloom in the latter part of March, and retarded the blooming plants for April so much that there was nothing for the bees from which to replenish their stores, which were soon consumed, since heavy brood-rearing had been going on during the extended favorable weather previous to the frost. It also happened that the season so far had been a dry one, and there had not been an over-abundance of bloom. This, together with the late frost, made all a very discouraging situation, and I was "figuring" on how many barrels of sugar I should have to feed, when, lo and behold! a light rain saved me. The "prickly-pear" cacti came into bloom and yielded such an abundance of nectar that not only the brood-chambers were filled but some was stored in the shallow extracting-supers in a little more than a week's time. The bees built up with astonishing rapidity to rousing colonies in a short space of time, and were in the best possible condition for the main mesquite flow, which commenced early in May, since it was also delayed for about a month on account of the frost, otherwise blooming in April. These cacti are very common throughout Southern and Western Texas. In Southwest Texas, where the photo on page 558 was taken, the ranches were covered over large areas with a thick growth of prickly pear, so that neither man nor stock could pass through except along the cleared roads or certain open paths. Often, as far as we could see, there was nothing but prickly pear and mesquite-trees, the cacti sometimes towering from 8 to

10 feet high. The thick, green, pear-shaped leaf-like stems or joints, from which the plant gets its name, are generally mistaken for leaves; they are very thick and succulent, and bear bunches of small stout bristles and longer-barbed spines; hence it will be seen how such a plant can "keep on growing," even during dry seasons, from the "water" stored up in these joints. Consequently the cactus-plants had not suffered during the dry spring mentioned, as did other plants; and as the roots are very shallow, or near the surface of the soil, and wide spread, the light rain, coming at just the right time, helped these wonderfully while it had little effect on other vegetation. Both an abundance of honey and pollen were obtained, the honey being light amber in color, of heavy body, but "stringy"—so much so that it fairly draws out into "strings" when very thick. The flavor is very rank; and, from reports of other bee-keepers, as well as from my own experience, it is too rank for human food, while it is quite valuable for brood-rearing, especially during an off season as here related.

The "leaves" of this cactus form an important food for grazing animals, known as "nopal." In portions of West Texas, and over a great deal of South and Southwest Texas, the prickly pear has long been regarded as an unmitigated nuisance; but during seasons of drouth the ranchmen of those sections have found it a very good cattle food after the spines have been burned off over a brush fire or otherwise. Many ranchmen have provided themselves with "pear-burners," as they are called (large gasoline-torches), which are carried around over the pear-producing area, and the spines are burned off the plants. The slight scorching given the plants during the spine-burning process does not seem to affect the taste for the cattle, for they eat it with avidity, and it is apparent that, had it not been for the spines, this plant would long ago have been wiped out of existence.

Since the impetus given the making of denatured alcohol it is claimed that these cactus lands will become valuable for the making of alcohol, and the owners are figuring on a large revenue from such.

The "nopal leaf" is much used for poultices, and I know of nothing I like better for "drawing" sores or boils. The spines are scorched off over a fire, and the leaf baked through well, when it is split in two and a piece tied over the sore while as hot as can be comfortably borne.

Editor Root was much interested in "this beautiful plant" that "any Northern landscape gardener would give any thing for if he could only grow them up North." Yes, Mr. Root, do you still remember how my mother laughed at you for admiring "our common old cactus" so much, shown in your A B C of Bee Culture when visiting me in 1900?

[Yes, indeed, well do we remember it. We admired it much. Perhaps if we were more intimately acquainted with it, we might think less of it.—ED.]


## MR. O. L. HERSHISER AND HIS METHOD OF WINTERING BEES; ARE BEE-SUPPLIES SOLD AT TOO HIGH A PRICE?

There are advantages in traveling. You see many things from a different angle from what you are accustomed to. We learn of how little consequence we are in the great world in which we live and move. We get new ideas in exchange for our own, and such trades are often of mutual advantage. These thoughts were suggested by a short visit at O. L. Hershiser's, at Buffalo, N. Y.

Now, really, Mr. Hershiser is quite a fellow. I believe he will weigh more than 200 pounds; and if he were a policeman, and if I were living on his beat, I should not want to be caught cutting up any questionable pranks. Besides, what he doesn't know about making beeswax hardly seems of much value. The fact that he can afford to buy what other bee-keepers throw away, and transport it hundreds of miles, and make it pay, is what few bee-keepers would care to attempt. I can now understand why he advertises for "slumgum." His idea of trying to squeeze all the ink, color and all, out of a sponge is one of the brightest ideas I have seen lying around loose in quite a while.

Then there is the "Hershiser hive-bottom." It looks to me like a good thing. I went into his cellar—not a dead bee on the cellar bottom. No, that is not quite right. I did see just one, but that is not bad where 75 or 100 colonies are stored.

His bees appeared to be as quiet as kittens. You could scarcely hear them purr. And then to be able to look into the bottom of each hive and see just how many bees had died was something new. Of course, you can sweep up the dead bees from the cellar bottom, but somehow I never seem to get them all; and how it does make one feel to step on dead bees! And then to think that you can carry them in and out of the cellar without a bee getting out! I try to think mine will not come out of their hives, but they always do, and bees are not apt to be very tidy when they first come out in the spring.

If I were using single-wall hives I should want every one to have just such bottoms; but whether I could afford it is another thing. It seemed to me the price asked for these hive-bottoms was rather high, but perhaps not higher than other supplies.

This reminds me that I found there was a feeling quite general among bee-keepers that those who furnish supplies for bee-keepers have set their prices quite too high, and are getting rich at the expense of bee-keepers.

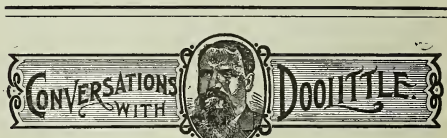
Well, this was a great idea, and something new to me, as I have usually bought my supplies, or most of them, from near-by box-factories, and sent my wax away to be made into foundation. I was given to understand that supply-dealers were charging more than twice the actual cost of producing. If this were so it certainly seemed as though a great injustice were done; and I said within myself that, if some benevolently disposed individual could be found, who had fine mechanical ability combined with good business capacity, and his pockets well lined with gold, and he would go into the supply business, and charge us bee-keepers only five or ten per cent above cost for his wares, I for one would patronize him unless I found it more convenient to buy nearer home, or make what I wanted myself. Then these wicked railroads! I have been told that the actual cost of moving a ton of freight over a railroad is but one-eighth of a cent a mile, while I am charged thirty-five cents for moving a hundred pounds five miles. Outrageous!

There, too, are the telegraph companies, and other monopolies. "Surely the big fish are eating up the little ones." But as my train carried me along, other thoughts came to me. As I passed costly bridges or expensive cuts or embankments, I was reminded that enormous sums were spent in building the roads. To this, other sums must be paid for rolling-stock and a multitude of employees kept to keep the road in repair and do the business. The actual expense of hauling freight over a road is but a drop in the bucket compared with other necessary expenses that make it possible to haul freight so cheaply; and I have sometimes wondered if it might not be something the same with the supply business. The expense of a well-equipped plant for manufacturing all kinds of bee-keepers' supplies must be very large for buildings, power, machinery, labor, to say nothing of patents, etc. Much of the machinery must be gotten up for this express purpose, and, of course, is very expensive. And the necessary capital to hold in stock until bee-keepers are ready to buy is no small item.

I have said nothing of expensive correspondence and clerk hire, or losses that come to most people who do extensive business. Speaking of these things reminds me that I was, some fifteen or twenty years ago, in the supply business in a small way. I had a foundation-mill for making my own foundation, and why not make it for my neighbors too? But I soon had enough of it, for I found that, unless the season was good, they would not buy, and I must carry it over a year. If the season was good, perhaps Mrs. So and So would call at two o'clock P.M. when I was the busiest. They had just had a swarm, and she wanted 65 cents' worth of foundation. Her husband would pay me when he saw me. She said he was very busy to-day getting up hay. Who could resist such an appeal? But her husband never saw me; if he did he conveniently forgot to pay me. I remember one man who came six or eight miles after dark to get a few pounds of foundation and a thousand sections. I supplied him as well as I could; but really he didn't have the cash just then, but would remember me later. When, some months later, I suggested to him that I was short of money, and that, if he could help me, I should be very grateful, etc., he blushed to think I should doubt either his ability or willingness to pay me. He "would do so just as soon as he sold his cheese." Alas! I have not yet received my pay. I suppose he has not sold his cheese.

Now, I could stand an occasional loss; but to have people come when I was the busiest, and take up my time, was more than I could stand, and I said that, if this was the supply business, I had had enough of it. So, perhaps, my friend Hershiser does not ask more for his hive-bottoms than he should, nor the supply-dealers charge more for supplies than they should, in order to do an honest and successful business.

I have noticed, during the past forty years, many supply manufacturers have gone out of business without any one to take up the business. For myself I much prefer to keep bees to making bee-hives.




### INTRODUCING VIRGIN QUEENS AT AN OUT-APIARY.

"Hello, Doolittle! It's a long time since I have seen you."

"Well, if that isn't F. H. Cyrenius! How do you do? Glad to see you. How are you and the bees prospering?"

"We are getting along about the same as of yore, only time has carried us on so that I am not quite as limber-jointed as I was when we met in that Utica bee-convention away back in the early eighties."

"Yes, surely time has carried us on at a rapid pace; but I think you have stood the racket much better than I. I was obliged to give up the greater part of the apiary work to my partner, Mr. Clark, as my joints got so stiff with rheumatism that they would not move around with me as supple as in years gone by, when we used to attend conventions together."

"I know I have not seen you at conventions of late, and so I thought I would come and see you (by letter), and we would have a little convention all of our own. You know it is always easy to hear from any one when that *one* wants something of you."

"Well, from the thousands of letters I have answered regarding bee-keeping I am inclined to think that you are right. But what can I do for your wants at this time?"

"The first question I want to ask is this: If bees will accept queen-cells 24 hours after

removing a laying queen, why not introduce cells in queen-cell protectors at the time the queens are taken away from the colonies?"

"This can be done, and is the way I very often do, if I have ripe cells when I wish to take away queens, and the weather is not too cold for carrying the cells about while I am doing the work of putting up queens to send away to customers, or for other reasons."

"Very well. Now, if a colony will accept a virgin queen emerging from a queen-cell in a queen-cell protector from 20 to 24 hours after the old queen has been taken away, why not introduce a virgin queen at the time of taking away the old one by putting her in a cage with a candy cork so that the bees will release her by eating out the candy in about 24 hours after she is given the colony?"

"Because bees do not look on an old virgin queen the same way they do one which is and has just emerged from a queen-cell in their own hive. The virgin just emerged is a weak downy thing to which the bees pay little more attention than they do to a worker just emerged, for the next ten hours, while your one to five day old virgin queen asserts her queenhood, if I may be allowed that expression, and the bees are in no mood, at this stage of proceedings, to accept a running, squealing, unfertile queen to take the place of their old, sedate, much-loved mother. They take to her somewhat after the way grown-up children do to a young new stepmother—not always pleasant relations, you know. I have very little success in introducing these old virgin queens to a colony which has been less than 72 hours queenless. This is the amount of time that Mr. Alley says is required for the safe introduction of virgin queens, and I have found Mr. A. very correct on this point."

"On page 126 of Scientific Queen-rearing, when speaking of introducing virgin queens you say we should remove all combs from the hive to receive the caged virgin queen, then fasten the cage containing the queen to the side of the hive, put in a frame having a starter of foundation in it, using a feeder beyond this, when the queen will be accepted as soon as the bees eat her out of the cage, from 12 to 24 hours later. Now, what I want to know is, would there be any objection to using a frame of honey next to this startered frame? And could we not go still further and use not only a frame of honey but a frame having only sealed brood in it, in addition to the one having honey? This would do away with the feeding and the looking after the colony so quickly, as your plan requires."

"I should like to say yes to this; but my experience says that, when the bees are given any thing that resembles their old home life with their much-loved mother, they will hold out much longer against an old virgin queen than they will if every thing that has the smell or looks of where their mother has been is taken away from them. With a comb of brood and honey, as you propose, I have had them worry and kill old virgin queens when released 48 hours after they were hopelessly queenless. And they will often worry and kill such virgin queens when put in without a bit of comb, and feed only in a feeder, as given in Scientific Queen-rearing, if the queen is let out much sooner than 20 to 24 hours. I have had them killed when let out at 10 to 12 hours, when they had absolutely nothing from which to rear another queen except the cage she was in, the feeder, and the bare walls of the hive. These things have seemed surpassing strange to me, that they will go to work and kill their only chance for an existence as a colony; but thus they will often do when an old virgin queen is substituted in place of their fertile mother."

"The queens I received from you last year were introduced as follows: Ten or twelve days before the queens were expected to arrive I placed three frames of brood and one of honey in a hive on top of a queen-excluding honey-board, over strong colonies. When the queens came I took off these hives and placed them on new stands, putting a queen in each, and every queen was accepted."

"Yes, that would be just what I should expect; for under these conditions the bees which you set with the combs and hives on new stands were, to all intents and purposes, *queenless* bees, just in a condition to accept a queen let out among them from a cage by their eating her out from 20 to 24 hours later."

"Why do you call such bees queenless? they had a queen below the excluder."

"I know they did. And while this was so, these same bees would build, complete, and allow to emerge, virgin queens from queen-cells, just the same as will a colony from which you have taken a queen. Here is one of the strange things about bees above a queen-excluder: They are queen-right or queenless, just in accord with the way they are treated by the apiarist. Drop a queen among them when they are over the excluder, and they will proceed to kill her at once. Set them off on a new stand, allowing them to remain there for 24 hours, and then drop the same queen among them and they will receive her at once, and very often they will do this if she is dropped in within half an hour after setting off."

"Well, then, why not use a virgin queen instead of a laying queen? In this way we could form colonies at an out-apiary, thus giving me time to prepare ahead; and when the virgins were hatched I could take them out and make while I was there the colonies I desired."

"I have made colonies in just this way with success very many times, only I make the candy cork long enough so the bees would be from 40 to 48 hours in liberating the queen, for an old virgin queen is not taken as kindly to under any circumstances as is either a newly emerged virgin or a laying queen."

"Then you think this plan will work?"

"It has been successful with me, and I am equally successful in taking the virgin queens, queen cells, or laying queens with me when I go to the out-apiary, and, on arriving, arrange things as you tell me you do; namely, three frames of brood and one of honey, without bees; when this hive is set over a queen-excluder, on a strong colony, leave it there three or four hours for the young bees from the colony to run up on the brood, when the hive is set off on the stand I wish it to occupy, a caged ripe queen-cell being given them, or a laying queen in a cage from which she will be liberated in 20 to 24 hours, or a virgin in a cage from which she will be liberated in from 40 to 48 hours."

"Well, I thank you. This last is the most simple of all of the plans of making colonies at an out-apiary."


Somebody asks where that 60-cent French honey came from. Probably from some silver leaf and golden rod.

*El Colmenero Espanol*, one of the most welcome visitors to Pickings' desk, has suspended publication. This leaves the Spanish apicultural field practically empty so far as journalism is concerned. It is to be hoped that our esteemed contemporay will perform the phœnix act and arise from its own ashes.

The German *Praktische Wegweiser* says, "The feeding of farinaceous foods may induce that contagion—foul brood. Some beekeepers claim to have observed that bees in the neighborhood of flour-mills are most often attacked by that malady. It must be admitted that flour which has stood outdoors, and made damp and moldy by dew or rain, is not conducive to the health of bees. But we must not conclude from this that such food is the *cause* of foul brood, for that is due to a special germ." The fight is on.

Touching the pronunciation of the word *propolis*, the following is instructive and interesting:

*Dear Sir:*—In regard to the discussion of the pronunciation of the Greek word *propolis*, allow me to state that, so far as the meaning is concerned, I have nothing to say; but the preposition *pro*—in front of—and *polis*—city—have these respective meanings. The same word, *propolis*, was, more than 2229 years ago, used by Aristotle for the same purpose, viz., that substance which bees accumulate in front of the entrance, holes, etc., of their hives to protect themselves from cold and all sorts of enemies. But as regards the *accent*, I have to refer to that rule in Greek grammar—1. In compounds the accent remains where it was when the last syllable is long, as in dia-bē*tes;* 2. and the same is raised when the last syllable is *short;* thus, prŏ-polis, prŏ-phasis, prŏ-thesis, prŏtasis, etc. PERICLES XANTHOULIS.

Constantinople, Turkey, Feb. 13.

While the above may be "all Greek" to some, it certainly comes from good authority, as Greek is doubtless the mother tongue of the writer.

A French writer says foul brood is playing havoc in the Grand Duchy of Baden. He says that last fall there were 358 foul-broody colonies in that small area (5690 square miles), and in one section 32 apiaries were diseased. A German writer, in commenting on this state of affairs, in the *Muenchener Bienenzeitung* (German), says, "One need not be surprised at such a disastrous state of things. It is the reward of negligence. Bees are given adulterated wax; they are fed sugar instead of honey; every day they are visited at unseasonable times; the colonies are evened up; to-day their brood-nests are contracted, only to make them larger tomorrow; stimulative feeding is practiced; queens are replaced; drones are beheaded, and what is the result of all this? The colonies become weaker and weaker, maladies of all kinds break out, and finally the apiary is deserted."

What better would it be on this side of the water, without foul-brood laws? Can't this be brought before the Indiana legislature when a second attempt is made to get a foul-brood law there?

Mr. J. B. Leriche, of Amiens, France, is an apicultural writer of great note in his country. In speaking of nectar he says:

"Nectar, in Greek, means *that which does not kill; that which confers immortality.* Mythologically speaking, it is a potation which the gods drank on Olympus, and it must not be confounded with 'ambrosia,' which was the *food* of the gods. Ganymédé poured it from a golden pitcher into the cup of Jupiter; and Hebe, with an amphora of alabaster crowned with roses, poured it into the cups of the other gods.

"Scientifically speaking, the name *nectar*, according to the famous Linnæus, is given to the sugary and melliferous liquids that a large number of plants yield, and which insects, notably bees, gather with avidity. *Nectaries* is the name of the organs which yield nectar.

Just here Mr. Leriche branches off on to the subject of hydromel; and as that matter is continually coming to the front I should like to get accurate information concerning hydromel. Is it intoxicating, or does it vary much in power? A year ago my friend Mr. Hempflinger, then working here, but who had always lived in Hungary, made some hydromel and gave me a bottle of it. I forgot all about it for ten months, when I came across it and pulled aside the wire over the cork. It "went off" like a cannon. The contents tasted like common pop flavored with honey. I wrote to Dr. C. C. Miller in regard to it, saying I could not perceive any

alcohol whatever in it. His reply below is interesting, and his advice is safe to follow:

*Dear Wallie:*—I'm loaded on the question of honey-drinks, but am just a little afraid to fire. As you intimate, there is much in foreign journals—in some French journals page after page—about drinks from honey, and I think always intoxicating; but I may be mistaken. But I think a delightful drink can be made from honey that is non-intoxicating. Whether we are right to keep entirely quiet about it is a question.

Sweet cider is good and non-intoxicating, but many think it is better not to drink it, because it is very hard to draw the line between sweet cider and hard cider. If it's the same way with honey-drinks, then we'd better continue silence.

On the other hand, the experience of my boyhood with small beer or spruce beer was extensive, and I *think* never the slightest harm came from its use. It did not change, as cider, to a dangerous drink—merely became insipid, flatly sour, after a time. I think the same may be said of Hires' root beer. But I think there was alcohol; and *is* alcohol in any of the soft drinks made effervescent by yeast and sugar. You say that year-old drink the Hungarian boy gave you "Certainly had no alcohol in it." I feel very much like saying, "Certainly you are mistaken." You will find that, wherever yeast grows, if I am not mistaken, that from the sugar or starch it produces alcohol and carbon dioxid. The latter is the gas that makes the soft drink sparkle and nip, and that makes bread porous. You can't raise bread yeast without producing alcohol, although the alcohol may become dissipated. But in kumiss and the small beers I think there is not more than 1.5 per cent of alcohol, and we ignore the alcohol and note only the harmless gas. In the beer of the saloons there is about 4 per cent of alcohol.

Now I *think* we may have a good drink with no more danger of cultivating the liquor taste than by drinking kumiss; but it would be a terrible thing to make any mistake in the matter, and I'm just a little afraid to say in print what I think. On the other hand, if we can have from honey something just as good and safe as kumiss it might be wrong not to make it known.

Yes, I think I know the minutiæ. The essential parts are honey, water, and yeast, and spices of any kind may be added. In five quarts of boiling water put one pound of honey and some lemon-peel. When cooled to blood-heat, add half a cake of compressed yeast; let stand open two days, and then keep bottled three days or more. The bottles must be very strong.

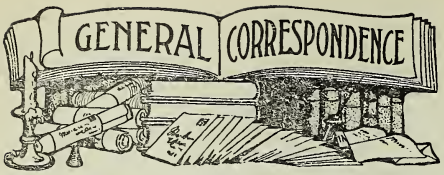
Marengo, Ill., March 5. C. C. MILLER.


SOME THINGS I HAVEN'T DONE; HATCHING CELLS ABOVE PERFORATED ZINC; THE SWARTHMORE SWARM-BOX FOR CELL-STARTING A SUCCESS.

I've been trying the dual-queen system. It worked to perfection. The dual was fought as soon as I put the second queen in the hive. I acted as second; didn't have to act many seconds, either, till the queen and my plans were balled up together. Mr. Alley informed the bee-keeping public that bees do not tear down queen-cells till the queen starts the game. I knew better than that; but when a man like Mr. Alley speaks I have a habit of believing it, even if I know it is not so. So after reading that, I decided to forget the past and begin life anew. I raised a fine batch of queen-cells. Four I put into four two-story hives over queen-excluders with laying queens below. Two I gave to other colonies, removing their queens just before giving the cells. Results: The real young tender queens in the cells just sealed, they ate. The older tougher ones they just "chawed up" and spit out. The cells in both queenless colonies were torn down. All in upper stories were torn down but one. This one they nursed with the greatest of care. They trimmed off all surplus wax, and stuck it fast all around so that it would be sure to hatch. Just as soon as the queen hatched they killed her and dragged her out. What on earth was their idea? Did they let her hatch and then kill her just for fun, or to let me know how little I know? Locality can hardly account for the different actions in Mr. Alley's bees and mine. Is it not possible that the race of bees had something to do with it?

I believe the new swarm-box, as used by Swarthmore and recommended in the government bulletin on queen-rearing, to be the best thing ever given to the queen-breeder for the purpose of getting bees to accept cells. Italian bees seldom accept more than six or eight cells in the ordinary way. With the swarm-box they accept forty or fifty just as readily. I pour the bees into the swarm-box with a big tin funnel having the cells in place, so that not a single bee can get out. For about an hour they hang in a cluster to digest the honey they devoured in the "shook" up. Then they begin to buzz, and try to get out. I find this the best time to give them the grafted cells instead of waiting six hours as recommended by Swarthmore. Cells once used must be thoroughly cleaned by the bees, which takes from four to eight hours. They will not accept them till they are thoroughly cleaned. I succeed best with new cells. I use no royal jelly. I have frequently grafted fifteen cells in about six minutes, and then examined the first one and found that, in that short time, the bees had fed the larvæ with considerable thin jelly. A queen raised in the natural way could not have better care.

I thought I would improve on this box a little, but haven't done so yet. I thought to make this swarm-box a permanent affair, so as to save the work of loading it with bees every time I wanted some cells. I filled it with bees as usual, and made a flight-hole, and thought in this way I could keep them accepting cells all the time. I grafted one row, and then looked at the first cell. They had eaten up the larva and drank its broth; the next the same, and so on all down the row. I found they were within three cells of being caught up with me. I started afresh to graft some more, but they just wouldn't allow that graft to be worked on them. We played tag three times around the box, the bees eating up the larvæ as fast as I could dish them out, till I got tired and would not play any more. Strange why they will accept cells so much better when they are shut in and are frantic to get out.




## HOW TO DISPOSE OF NEW SWARMS AND THUS CONTROL UNDESIRABLE INCREASE.

### How the Plan on Page 1058 may be Followed when the Hives are in House-apiaries.

BY E. W. ALEXANDER.

[As some of our readers may not have handy our August 15th issue of last year, containing the article to which our correspondent refers on page 1058, in the subjoined, we will state that the plan is one that allows the first swarm to issue, which swarm is finally reunited with the parent colony in such a way that there will be no further swarming, the two forces working together unitedly as one colony to produce a crop of honey. The plan is, in brief, as follows:

When the swarm comes forth it is hived on frames of foundation. The hive containing it is then placed on top of the parent colony, but with the *entrance in the opposite direction*. On the evening of the fourth day the newly hived swarm with its partly drawn comb is lifted off and set to one side temporarily. The *parent* colony is now opened up, the combs are all removed, and shaken two or three feet from the old hive-entrance. After they are clear of bees they are inspected carefully, and any queen-cells found are destroyed, after which the combs are put back in the old hive. The newly drawn combs of the swarm in the hive set aside temporarily are next shaken right over the first lot of bees. The queen is hunted up, when she is started for the entrance of the old hive. The bees of the two shakings mingle together, finally crawl into the parent hive, and begin housekeeping anew as if nothing had happened. Perforated zinc is then put over the hive, when the partly drawn comb of the swarm is placed on top in a super. If extracted honey is not the object, a comb-honey super is put on instead.

The philosophy of the plan is that the natural bent of the bees to swarm is satisfied. The honey in their honey-sacs has been converted into wax and built out into combs. Cells of the parent colony have disappeared. The old queen goes to work as if nothing had happened.

Mr. Alexander explains that this plan is, in his experience, almost infallible in keeping down increase and preventing further swarming; and, further, that the two united forces will produce more than the two forces run separately in separate hives. In commenting on this method Mr. Alexander writes as follows:]

Since my article on page 1058 was published, giving our way of treating undesirable increase, several letters of inquiry have been received as to how that method could be applied to colonies kept in a close house-apiary. Yesterday I received a letter from my friend, Wm. Hesse, of Dresden, Germany, wishing some more light on this subject from me through the medium of GLEANINGS, for those who are keeping their bees, like himself, in close buildings. I can see no reason why this method would not be practical when applied to house-apiaries. All that will be necessary is to make a temporary stand for the new swarm as near as possible to the parent colony on the outside of the building, only have the new swarm face in the opposite direction, so that they will realize they have a new location. Then in four days remove all queen-cells from the parent colony and mix up the bees of the new swarm with those of the old colony as best you can, using some smoke so as to demoralize them as they are again united into one large colony. Then remove the temporary stand that the new swarm occupied, and the bees will soon locate anew in their old home.

I do hope every bee-keeper in the land, who does not care for increase, will give this method of treating undesirable swarms a thorough trial another season. With us it is the easiest way we have ever tried to keep down increase, and at the same time have all colonies strong in bees and maturing brood to make them still stronger in their working force; and certainly they will work with more perseverance, and give us more surplus, than when kept from swarming by removing queen-cells, which puts them in a sulking condition, wasting much of their time through our best harvests, which we should always try to avoid.

Delanson, N. Y.

[We do not quite see how this plan can be worked satisfactorily in a house-apiary, but perhaps it can. The general features of the plan, on outdoor colonies at least, seem to suggest that it may be a good one to practice. As so many of Mr. Alexander's ideas have worked out satisfactorily we may well afford to give this a fair test.—ED.]

## THE COUNTER-ATTRACTION OF OUT-DOOR FEEDING.

### How all Manner of Work was Successfully Done During the Time of a Dearth of Honey, Without any Robbing.

BY WM. M'EVOY.

The honey crop being almost a complete failure in my locality I concluded to extract all the honey, and feed sugar syrup for winter stores. As all the supers had to be taken off and the honey extracted, and 250 colonies fed, I saw that I had to begin about the 25th of August, which I did, so as to get all fitted up in good time. The weather was very warm just then, and the bees not gathering any honey, and over 200 of these colonies were right in the center of our village. To open hives and expose honey at such a time would set the bees to robbing, and cause them to become very troublesome to my neighbors if this work was not managed so as to turn the attention of the bees from the colonies that I was going to work with.

About one hour before sundown I put Porter bee-escapes under the supers; and, to get the bees to *rush out*, and have the supers ready to take off in the morning, I lifted a few of the combs up about one inch, and let them down again. In the mornings I set out (about twelve rods from the apiary) a dozen or more hives with combs in for the bees to clean out. I took half of the combs out and spread the rest well apart so that the bees could get freely at them without getting

daubed with honey as some of them do when the full set of combs are left in. When I kept the bees engaged cleaning out these combs I could take off supers, open hives, and examine any colony with the greatest of pleasure without a bee coming from any colony to bother me. I saved these combs for this purpose, and set out only enough from time to time to engage the bees while I was working with the others.

When the bees cleaned these combs they settled down very nicely and quietly. I had 60 feeders, and many of these held 28 lbs. I put these all on, and about sundown filled these with sugar syrup mixed with a little honey. I filled every feeder the second time, and when the bees had their brood-chambers full, and began building comb in the feeders, I put the bee-escapes under the feeders; and when the bees were out of them I placed these on other colonies. Many of these feeders were half full when moved off one hive on to another.

When I had over three-fourths of my colonies fed up this way I set out some combs for the bees to clean while I took from two to three capped combs from every colony that I fed up so well, and then, with division-boards, crowded the bees among the remaining combs. In the *evenings* I took *all* the combs out of the colonies not fed, and placed from five to six all-capped combs in each hive, which I took from those that were fed so much. I then, with the division-boards, crowded the bees on these capped combs and then packed each colony with forest leaves. These colonies being crowded up on a limited number of combs will winter better and brood up much faster in early spring. Where any colony will need help on or before the middle of March I will place a *warmed* comb of stores (flat like a board) right over the cluster, with a bee-space under and over, and then pack over it until spring. When the bees need more room in spring I will take out the division-boards (which are boards fitted into frames) and then fill out the hives with the best of all-worker combs.

Woodburn, Ont., Jan. 21.

[We have tested the principle in the way of giving a counter-attraction by outdoor feeding, and we find it works just as our correspondent says. Our columns during the past two years have contained reports of our experiments. See page 955, Sept. 15, 1905.

Some of our veteran bee-keepers hesitate to try this outdoor-feeding plan; and while we do not recommend it generally for beginners, the experienced bee-keeper need not be afraid of it. We have time and again stopped severe robbing by putting out a counter-attraction of outdoor feeding.

The plan is particularly useful during extracting time when there is a dearth of honey, and robbing would be severe under ordinary conditions; but in order to make it work successfully the bees should be fed very dilute honey a few hundred yards from the apiary. This should be continued off and on at certain hours for three or four days just prior to the extracting; then, when ready to begin work, commence feeding outdoors, and, presto! there will be no more robbing than there would be during a clover or basswood flow. Keep up the feeding while the extracting is going on. But we advise doing the extracting in a screened building, exposing the combs only when going to and from the extracting-house.

At first, when outdoor feeding is started the bees will start a sort of robbing keynote, and act just as though they were (which they are) trying to find the sweets. When they discover it, they stop their prowling around at the hives; and during the time they are thus engaged we can continue our work of opening the hives.—Ed.]

## ARTICLES WANTED BY THE COMMITTEE ON ADVERTISING HONEY.

BY N. E. FRANCE.

The $1408.27 raised by the Honey-producers' League has been turned over to the National Association. A committee has been appointed to spend that money in advertising honey and otherwise advancing its sales.

The first plan to be put into operation will be that of publishing, in the general press, short articles setting forth the healthfulness, deliciousness, purity, and desirability of honey as a food. The purpose for which these articles are written need not appear upon the surface. It is better that it should *not* appear; but there ought to be something about each article that would unconsciously lead the reader to have a better opinion of honey, to have greater confidence in its purity and healthfulness, or knowledge of its economic value as a food. They should show that honey is not an expensive food, requires no cooking, no sweetening, nor other special preparation, but is the "whole thing" ready for use; that choice bakings sweetened with honey do not dry up as quickly as sugar-sweetened goods. They should also call attention to the pure-food laws, and to the fact that no adulterated honey is now sold. These articles should leave the reader with his mouth watering to test the true deliciousness of honey.

The articles, which must be short, not over 300 to 400 words, will be judged with reference to their value—1. Will this article attract attention and interest the general reader? 2. Will the reader who is not acquainted with the use of honey be likely to investigate and use honey? Of course, it would be an easy matter for us to employ one man to write a series of articles for this purpose; but the committee wishes to secure the very best that the country can produce, and takes this method of inviting everybody to send in articles of this nature—not over 400 words, perhaps less, to include the thought. Mail each article to W. Z. Hutchinson, Flint, Mich., who will read and mark them according to its merits, the best to be marked 10, next best 9, and so on. They will then be sent to R. L. Taylor, who will also read and mark

the same. He will then send them to N. E. France, who will also mark them. The articles receiving the highest marking in the aggregate will be used, and its author paid $5.00. Everybody is invited to contribute. No limit to number of articles each person may send in. Perhaps 30 or more articles will be used. Please write plainly on one side of the paper, or, better still, use a typewriter if possible.

COM. { N. E. FRANCE, Platteville, Wis.
W. Z. HUTCHINSON, Flint, Mich.
R. L. TAYLOR, Lapeer, Mich.

March 1, 1907.

[The foregoing statement from the General Manager of the National Bee-keepers' Association should have appeared in our last issue, but it was overlooked. It is very important, as we regard it; for now that honey will not have a serious competitor in the shape of glucose mixtures to contend with, the future for pure honey is very bright; and the right kind of advertising and publicity work will do wonders in helping trade and in advancing prices. We are informed that the National is in a very flourishing condition; but if it had more members and money it could do more for the general interest of bee-keeping. We believe that every one of our subscribers should join for the good it will do to the general cause of our craft.

Referring to the subjoined statement we hope that a good many will avail themselves of the opportunity of winning the prize. In the meantime we should like to suggest that answers be based on the fact that honey advertised as such can be depended on to be pure, because the national pure-food law as well as the State laws makes it practically impossible for the adulterated goods to masquerade under the name of "honey;" and even if it were possible to manufacture comb honey, such stuff would be effectually barred by the national law, or, rather, we would say, the sales of such goods would never be able to find an outlet in this country except in some States where there is no pure-food law; and such sales would have to be confined *strictly within the State*—a thing practically impossible, and no one would take the chance. —ED.]

### RAILROAD TIES OUT OF HAND-PLANTED TREES THAT PRODUCE HONEY.

ACCORDING to report in the press, the Santa Fe railroad management has secured a ranch near Oceanside, Cal., which will be planted at once with eucalyptus-trees. The ranch has an area of 9000 acres, all of which will be planted as fast as men and money can do it. Already 700,000 seedlings of red gum, sugar gum, and ironbark, are being transplanted, and will be planted 1000 trees to the acre. In five years this would furnish 1000 ties to the acre; but the company intends to wait till the trees (most of them) are 15 years old, when each tree will furnish five or six ties. This will afford an excellent opportunity for a few bee-keepers, as the forest will be continuous or everlasting.

## TEN THOUSAND BEES, TEN THOUSAND MILES.

### Some Interesting Observations.

BY EDWARD F. BIGELOW.

[As many new subscribers are coming in at a rapid rate, perhaps it would be well to state that Professor Bigelow is one of the editors of *St. Nicholas Magazine*, having charge of the Nature Study department. He lectures extensively on nature and science studies, and is well known to the teachers of the country. The present article is unusually bright and breezy, and we are sure our readers will be glad to peruse it carefully.—ED.]

My bees may have been a few more or a few less, and we may have traveled a little more or a little less than ten thousand miles. But what matters a few hundred more or less, either of bees or of miles? I use the title because it sounds well, and because it comes reasonably near to exactness. I like it because it is euphonious, and I like the bees because they have, by their companionship and musical humming, made enjoyable many miles of traveling, at all hours of the twenty-four, and in all sorts of conveyances.

It came about in this way: Bees have always appealed to me as among the most interesting form of animal life, and most excellent objects for nature study. At first I tried to take them for short distances in a crude, single-frame, old-fashioned observation hive. I say crude, and it *was* crude, although I didn't desire it to be so, for I ordered from the The A. I. Root Company the best then obtainable. But styles of observation hives have changed within a few years, and that I have been an important factor in changing these styles is to me a matter of no little pride and pleasure.

But even my finely made Educational beehive, with all its elaborations for pleasing appearance, and its various appliances for experimental purposes, seemed not quite adapted to a nomadic life. So I dreamed again, and for days and days planned how to simplify, modify, and, I may say, even intensify, so as to bring the best features of that hive within the limits of two dress-suit cases. The result was a set of plans from which The A. I. Root Company prepared an outfit admirable both in appearance and convenience. This article is the first printed announcement that I have made of what I call "The Bigelow Traveler's and Lecturer's Hive." With this new contrivance I have carried a colony of honey-bees—one frame with as many extra bees shaken in as possible—together with two sections (full 4×5 size) super, and magnifying feeder, the last being the only part that is made exactly the same as the larger and regular Educational bee-hive. Both this and the super are fitted with the well-known devices of the larger hive for filling and emptying without liberating the bees. This is by combination of long slide over a plain opening and a Porter bee-escape. Slide out, bees go in or out; half in (over the plain slot), bees go out only (through Porter escape); and all the way in, the bees, of course, go neither in nor out.

A feeding-bottle (with perforated metal screw cap) is inverted over wire netting (tacked to under side of hole just fitting the top of the bottle) between the magnifying feeder and the super.

There is also the same form of feeding-hole in the cover of the super (not shown in the illustration) so that the super may be isolated as a separate miniature hive, on the principle of baby nuclei, for experiments in queen-rearing; that is, of course, if eggs and larvæ have been placed in one or both of the sections in this miniature super.

Thus, in compact form, I have an apparatus for showing practically or biologically almost every thing that pertains to apiculture. In fact, with this outfit and a supplementary box of small apparatus, and with specimens of the actual work of the bees (secured at various times in my apiarian laboratory) in comb and cell making, I do show almost all the essentials.

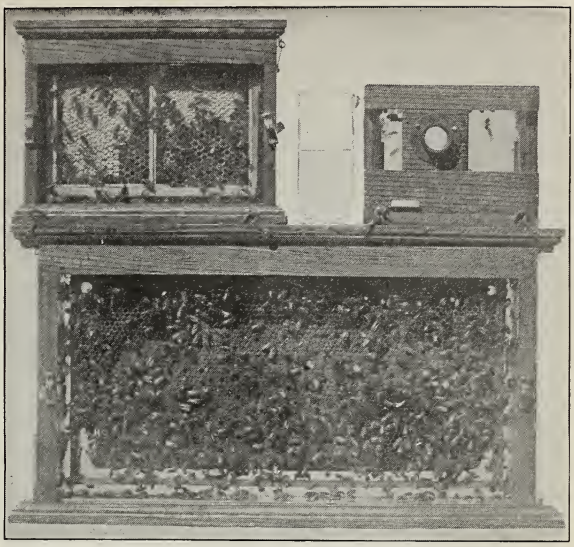


FIG. 1.—DR. BIGELOW'S TRAVELER'S AND LECTURER'S HIVE.

The main part of this traveler's hive fits evenly into a dress-suit case that is fastened by a pair of metal clasps at the top, and by straps going entirely around the outside. When carrying the case by hand I use both the clasps and the straps; but when it is resting on the floor, as opportunity may permit I use the straps only, allowing the case to stand open for about three inches for ventilation.

When necessary I also take my bees in this form to bed with me by placing the dress-suit case lengthwise at my head in the Pullman sleeper. There is plenty of room for my pillow at the side, and we sleep, approximately ten thousand and one in a bed.

For years some enthusiastic apiarists have recommended bees as a sure cure for rheumatism; but I think that I may take honor to myself as the first in the field to advocate bees as a direct specific in cases of insomnia!

The gentle murmur of ten thousand honey-bees all night by your pillow, or under it, has a soothing effect, to be fully appreciated only by those who have faithfully tried it.

At the Jenkintown convention I saw a demonstration of apparatus for applying bees to cure rheumatism. I suggest that, at the next convention, The A. I. Root Company exhibit a bed-fellow hive to cure insomnia! Perhaps we bee-keepers have been too careless in allowing the impression to be made that the effect of the bees is just the reverse of an insomnia cure. If so, I take the initiative in denying that misrepresentation. No more soothing effect can be obtained from any source than from the cheerful, contented hum of my ten thousand apiarian bed-fellows.

But I fancy some incredulous person, ignorant of most of the charms of honey-bees, rises to inquire, "Aren't they ever troublesome in bed? What if they should get loose?"

By accident I once happened to get into an "off grade" hotel in a small town of the middle West. I stayed but one night, and not all of that. I was never so early a riser. Before daylight I was on the street with a dress-suit case in

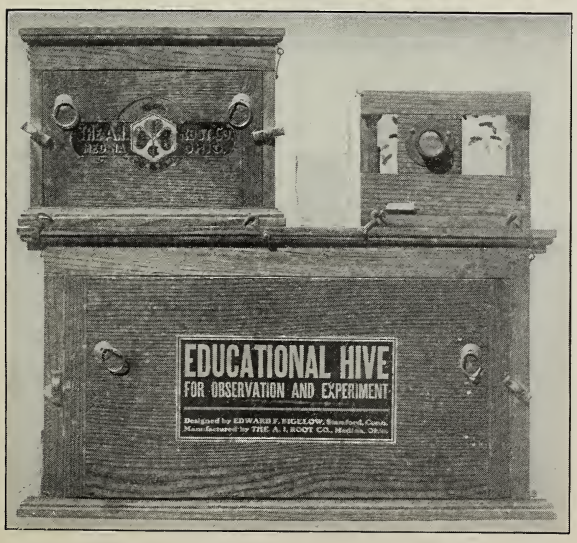



FIG. 2.—THE TRAVELER'S AND LECTURER'S HIVE CLOSED.

each hand. Frequent lightings of the dingy, broken-handled lamp, and lively skirmishes under the bedclothes for fleeing but not vanquished cimexian brigands, made me perfectly willing to exchange those two dozen or so of wingless varmints for the ten thousand bees in bed. But I had no choice. There was a "katabasis" with "the ten thousand" in the early morning.

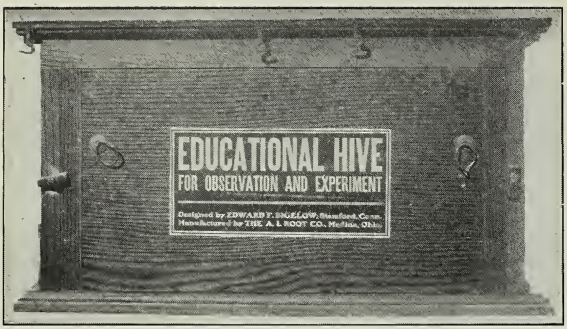



FIG. 3.—THE HIVE WITHOUT THE SURPLUS OR FEEDING ATTACHMENTS.

I have had some interesting psychological experiences with my bees, showing that the cerebellum often acts before the cerebrum can get in its work. Once a superintendent of schools volunteered to carry my cases—indeed, he *insisted* on it. I thought to impress upon him the honor he had received by mentioning that I had ten thousand bees in that case, when he instantly dropped it on the sidewalk—didn't even take time to reason that I had been carrying it for many miles. A similar experience occurred with a colored porter in a hotel at Indianapolis. The officious "gemmen" dropped not only my case but my umbrella and overcoat, by the hotel desk, and ran to the corner. I suppose he thought that every thing was infected by pernicious bees. Since then I never explain. "Where ignorance is bliss, 'tis folly to be wise."

But sometimes I come near to a smashup of my case without any explanation—indeed, with hardly an apology. In a trolley car, a heavy drunken man fell on top of both my cases, and for a time sprawled and floundered around on them like a turtle on top of an inverted tumbler. He seemed active, but unable to get very far. I collared him, and a passenger volunteered to pull his leg and thus we got him off. Those bees must have thought that a hurricane had struck their forest of hollow trees! But, fortunately, the case was strong and nothing was broken. In all my travels, not a bee has escaped to sting any one. I release all for the day at every place I stop, and they gather pollen and nectar as regularly as if at home. Sometimes the releasing is from an open window in my hotel bedroom, sometimes from a fire-escape landing (several stories up), or from the campus of some college. I rest or lecture, and the bees go foraging.

Of course, having once let them loose they can be fastened in only at night. In a normal shool in Michigan the hive was left in a broad window. I completed my lectures on Friday. I shut in the bees that night, as I was to leave by the noon train on Saturday. Imagine my chagrin upon going to the school at about 11:00 A.M., to get the hive on my way to the train, to find that the fool janitor had opened the slot and released the bees. "I thought you had forgotten it, and so I let them out to let them feed this forenoon. I knew you were going at noon."

"But, you meddlesome ignoramus" (I guess I used even stronger language), "how do you think I can get them in to go at noon when they are coming and going, and five thousand bees are out all over the city and surrounding country?"

"Oh-h-h! I hadn't thought of that—you can shut them in only at night—I see."

Could words express one's feeling? What a lot of trouble is caused by not thinking of

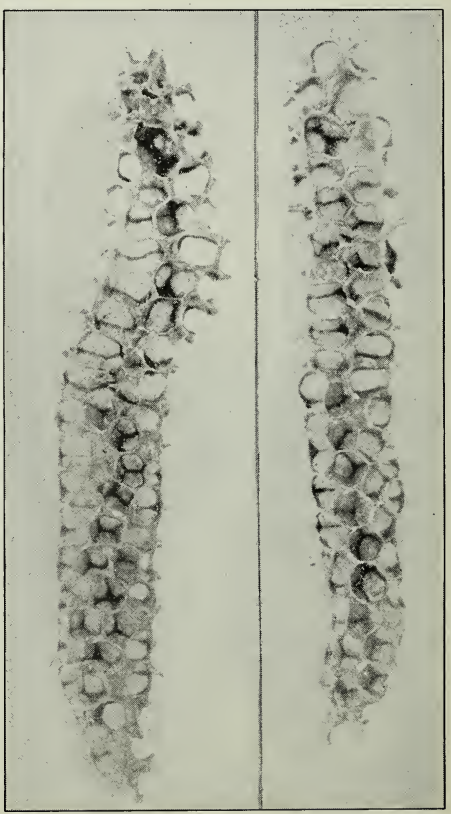


FIG. 4.—BRACE-COMBS BUILT TO THE GLASS IN THE TRAVELER'S HIVE TO PREVENT JAR.

"*that*"! To this day tears will almost fill my eyes when I think of the home-coming of my traveling companions, and the bee deaths at that window where no house was ready to receive them.

I was away from my own house for nearly a month after that. By liberal feeding, bees were bred to fill the hive as it was when we first started out. Though renewed in actual value, the loss from the sentimental aspect was never made good.

It is interesting to note one effect upon the bees of the continuous jarring and jolting of railroad travel. They try to obtain rest by building out burr-combs or bracing-combs to the glass. Several of these were built during a railroad run of two days. But when the glass was cleaned and the hive was at rest during the following week at a teachers' institute not a bracing-comb was built.

THE QUESTION OF BEE AND COLONY ODOR.

My traveling colony has brought out another interesting fact and raised a puzzling question. Whenever a frame with brood, bees, and queen is taken away for a journey of a week or two the bees left at home in the hive are, of course, queenless, and at once begin to repair the loss by building queen-cells. In restoring the frame, there is danger that the home bees will kill their returning mother. This has occurred, even when I have previously destroyed all the queen-cells. But in either case, whether the queen-cells are destroyed or not, why do the home bees wish to kill their queen? Wandering prodigals, in their estimation, are seldom to be looked on with favor. Why? You apiarist who talk so much of the changing smell of a queen during the period of introduction, please tell me, has she acquired a foreign odor and accent in two weeks' travel? If the mother were reintroduced to her daughters by the regular gnawing-out process of the introducing-cage, would she have recovered her home smell?

And that leads to another question: If she were thus in regular succession introduced to the one hundred colonies of an apiary, would she develop a hundred different smells? You advocate of smells, please put that into your smelter, and let me know what you draw off.

But all this is part of another question. If you would really know and love your bees, and make others know and love them, get a lecturer's hive and travel with them, eat with them, room with them, and sleep in the same bed with them.

Stamford, Conn.

[Referring to the subject of queen and colony odor, as suggested in the last paragraph, we belong to the school that believe that under normal conditions a queen will be accepted in a colony providing she has the colony odor, other things being equal. She may be accepted under other circumstances when she does not have such odor. When a queen that has traveled all over the country is returned to her colony she has lost the colony odor. Having come in contact with men and things has so changed her that even her own bees would seek, ordinarily, to destroy her. While we would not state it as a positive fact, we are of the opinion that, every time a queen is changed from one colony to another, unless she has acquired, through the process of introduction, the odor of the receiving colony, she will generally be rejected. We say generally, because there are several conditions under which a queen can be introduced without having the receiving colony odor; but these exceptions only prove the rule.—ED.]

## BEE-KEEPING IN TEXAS.

### Some Useful Devices as Made and Used by D. M. Edwards.

BY H. H. ROOT.

*Continued from the March 15th issue.*

If a man can be called the father of bee-keeping for his locality, then D. M. Edwards is the father of bee-keeping near Uvalde. He is always ready to tell what he knows,

FIG. 1.—D. M. EDWARDS ILLUSTRATING HIS UNCAPPING-BOX.

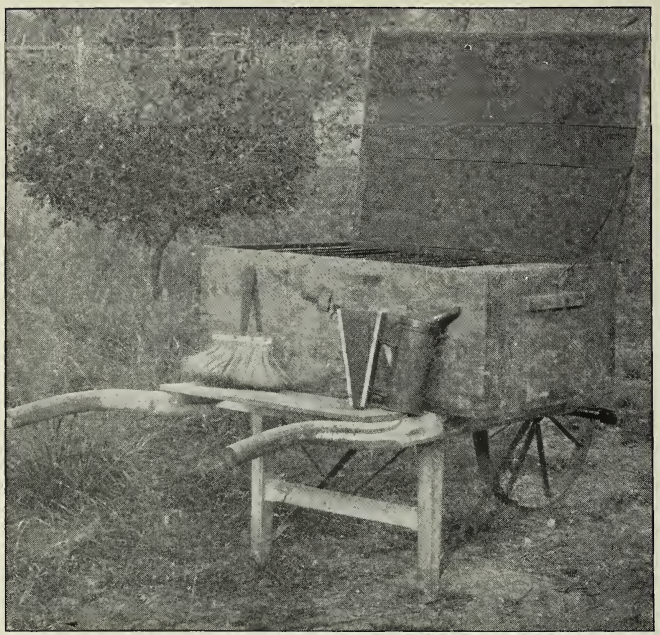


FIG. 2.—COMB-BOX ARRANGED FOR THE EXTRACTING SEASON.

and to give friendly help to his less experienced neighbors. For instance, when I saw ingenious tools and devices in his yards I would also see them in the many yards of the other bee-keepers near him. If he has a satisfactory method of working, he tells the others about it.

One very convenient and simple thing is his uncapping-can, as shown in Fig. 1. It is provided with a spout at the bottom of the further end, through which the honey may be drawn as it drops from the cappings above a screen near the bottom. At the top of the can is a frame, the construction of which is shown. A cleat is held by a bolt to one of the cross-pieces, so that it may turn around freely. When the bottom-bar of the frame rests on this cleat the frame may be turned around without effort.

Fig. 2 shows a comb-box on a wheelbarrow, the front of which is fitted with loops, etc., for holding a knife, brush, smoker, etc. The ground is so level and smooth everywhere that it is a pleasure to work with a wheelbarrow.

It is often hard work to carry or lift heavy hives; and so Mr. Edwards devised the lifting-rack shown in Fig. 3. It is seen that, the heavier the hive, the more the rack tends to close up and grip the hive. Short nails are driven through the pieces at the bottom, so that the points project a little through the wood, thus preventing any possibility of slipping. Two men can, with this rack, handle the heaviest hives very easily.

Mr. Edwards makes his own foundation, and also quite a little for his neighbors. For melting up his wax he makes an outdoor furnace of brick—see Fig. 4. This may be used also for liquefying honey and melting up

FIG. 3.—HANDY RACK FOR LIFTING AND CARRYING HEAVY HIVES.

FIG. 4.—D. M. EDWARDS' OUTDOOR FURNACE FOR MELTING UP WAX, LIQUEFYING HONEY, ETC.

old combs or slumgum for the wax-press.

Another thing that is very convenient is the moving bottom—see Fig. 5. As shown, this is a shallow box just large enough to allow a hive to stand in it. The bottom of this box is made of thin wood and wire cloth. The regular bottom-board is removed, and the hive set into this shallow box and held there by a nail driven half way in at either end. There is no chance for this to get knocked off, and yet they are easily taken off when necessary. There is no entrance, and the only opening is through the wire cloth at the bottom, which provides sufficient ventilation.

It took quite a while to see all these things, but it was still early in the morning when we started for the apiary of the Huegely Brothers. On the way I saw for the first time a brush fence It interested me greatly, and so I took a picture of it—Fig. 6.

It was in the honey-house of the Huegely Brothers that I tasted some very fine broomweed honey. It was very light and thick, and had a good flavor, although it was not as mild, of course, as white-clover honey. Broomweed honey often candies in one night. In three days the cans into which it is put may be turned upside down without danger of the honey running out. That is, in this time it becomes perfectly solid, especially if the weather is a little cool, as it generally is when the extracting is done.

Some of the other honey-plants are the guajilla, the cat-claw, and the mesquite. These were fully illustrated and described in the Nov. 1st issue of GLEANINGS for 1901.

Before I left, Mr. Edwards remarked that, in one place near Uvalde, there were 1500 colonies within two miles, and that the bees were unable to store surplus honey, therefore, except in an unusually good year. While it may be true that certain localities are not apt to be overstocked, yet it seems only reasonable that, in most places, there is a limit to the number of colonies that should be kept in one place and that, after this limit has been passed, the amount of surplus honey decreases as the number of colonies increases. As the whole region is overstocked, there is not room for another bee-keeper to squeeze in.

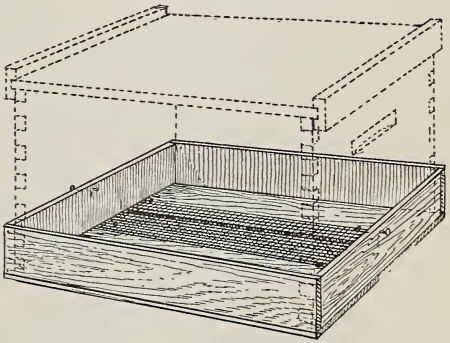


FIG. 5.—TRAY FOR MOVING BEES.

FIG. 6.—A TEXAS BRUSH FENCE.

FIG. 1.—CELLAR VENTILATING HIVE-STANDS, SHOWING THE NUMBER OF DEAD BEES PER HIVE.

## THE SHUT-IN PRINCIPLE OF HIVE-STAND CELLAR WINTER VENTILATION.

### The Result of the Experiment.

BY E. R. ROOT.

IT will be remembered that, in our Jan. 15th issue, page 83, we reported unfavorably on this principle of wintering; but later on, when the bees had had a flight, and had been put back, we concluded that, perhaps, that scheme of shutting the bees within the hive was going to prove a success after all. Now, however, we are again in a state of uncertainty, with indications going to show that for our conditions, at least, it is not a success. We have just taken our colonies out of the cellar, and find quite a number of them dead, and all the rest in a greatly weakened condition. As compared with former years when we used the ordinary hive-entrance (superannuated bees flying on the cellar bottom), the result of the shut-in plan the past winter is very disappointing. But we are not disposed at present to lay all the blame of this poor showing on the Hershiser principle of ventilating hives in the cellar. A part of the trouble may be due to too high an average cellar temperature. A report has just been received from Mr. J. E. Hand, of Birmingham, O., who has tried this shut-in hive plan with flattering success. He says he will use it in the future. An examination of the Hershiser bees on the Hershiser stands in Buffalo showed that the bees were doing finely; but in our cellar, at least, where the temperature ranged from 45 to 65, the results were as above stated.

Up to Jan. 1 we found many bees dead on the bottom of the ventilating hive-stands. On the first warm day we took the bees out and gave them a flight; then we put them back on the hive-stands, at this time putting half the bees in one compartment and half in the other. We then put in a scheme of

FIG. 2.—THE NUMBER OF DEAD BEES ON A VENTILATED HIVE-STAND, AND THE NUMBER ON A BOTTOM WITH NO VENTILATION.

ventilation for the cellar, whereby the temperature could be reduced, that worked so satisfactorily that we were very hopeful of good results, and so reported in our issue for March 1, page 308; but when we came to carry our bees out this spring, the silent dead told us another tale.

The subjoined half-tones, Figs. 1 and 3, from photos of the ventilating hive-bottoms, picked up at random, represent the number of dead to each hive since the middle of January.

Fig. 1 shows some of the bottoms have fewer dead bees than the others, while the two on the left foreground seem to have more dead than the average. An examination of the colonies revealed that this great amount of dead bees just below the cluster and in the hive was possibly a source of infection to the live ones above. The dead, swollen with dysentery, were traveled over by the healthy bees, with the apparent result that the infection was carried to the bees above, which in turn succumbed, adding their number to those that had preceded.

Fig. 2 shows a comparison that is somewhat remarkable. The hive-stand on the right was by accident put under the hive *upside down*, shutting out practically *all ventilation* while the colony just next to it had the hive-stand put under right side up. These two hive-stands were placed side by side and photographed, the result showing in Fig. 2. Remarkable as it may seem, the colony that had *no entrance and almost no ventilation* had very few dead bees. Indeed, the dead can be counted, as will be seen by reference to the hive-stand on the right in Fig. 2. Now the colony next to it, as far as could be seen, and of the same strength, and with a lot of ventilation, had a large number of dead bees. How do we know the colonies were of the same strength? By comparing the dead and living of both colonies. The excess of dead in one case seemed to show that ventilation was responsible for the heavy mortality. Taking into consideration the large number of colonies in the cellar which had the same losses, and others with too many dead for the time of confinement, it would seem to show that the Hershiser principle gave too much ventilation for the weak colonies in *our* cellar. Better would it have been by far if they had had the ordinary bottoms with summer entrances through which the diseased bees could have escaped, leaving the hive free from the contamination of their dead carcasses.

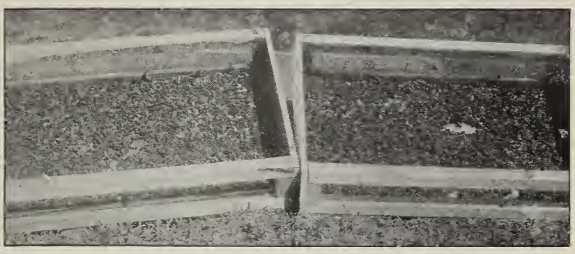


FIG. 3.—THE NUMBER OF DEAD BEES PER HIVE-STAND WHERE THE LOSS PER COLONY WAS THE GREATEST.

Right here an explanation should be made, else it may be difficult for the readers to harmonize the differences in results secured by ourselves, Mr. Hershiser, and Mr. Hand. We cellar only weak colonies or nuclei, the stronger ones being kept outdoors in double-walled hives or winter cases. With strong colonies, such as Mr. Hershiser and Mr. Hand have, such a large amount of ventilation possibly would do no harm. We say *possibly*, because we are not sure whether or not if it does no harm it does any good.

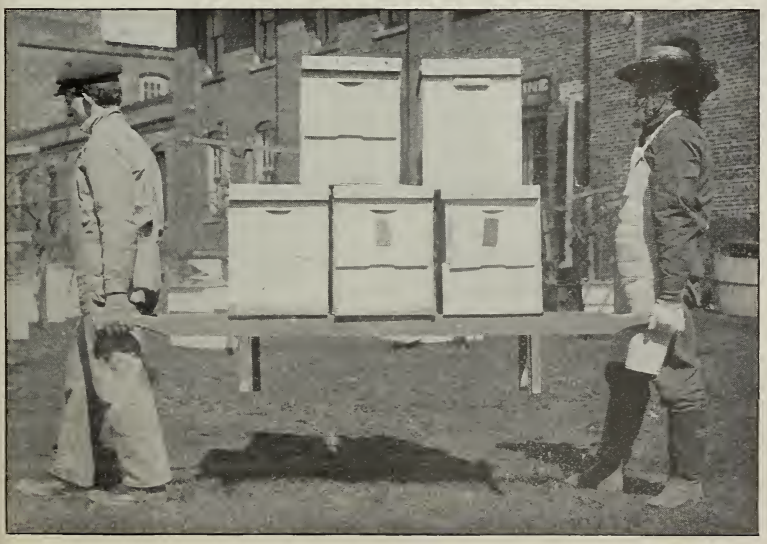


FIG. 4.—METHOD OF CARRYING BEES OUT OF THE CELLAR AT THE HOME OF THE HONEY-BEES.

In this connection it may be interesting to cite the case of Mr. H. R. Boardman, of East Townsend, Ohio, who piles his hives one on top of the other without any bottom-boards, like so much cord-wood, but so placed that

about a third of the bottom is open. While he was, apparently, having excellent results, we distinctly remember the time when he had

"PRICKLY-PEAR" CACTI IN SOUTHWEST TEXAS.

*See "Bee-keeping in the Southwest" on page 542.*

a good many dead bees on his cellar floor. Would he have had less if he had had less ventilation?

Two or three of our late correspondents on cellar wintering have strongly advised against this large amount of hive ventilation, arguing that it is too much of a good thing. One correspondent, it will be remembered, held that the brood-chamber was brought to too low a temperature, and that the bees, in order to keep such brood-nest warm, clustered near the opening to shut out the cold air We know that cold induces a large consumption of stores. Overfeeding in turn induces dysentery, and dysentery, death. Hence, it may be seen why so many of our colonies suffered. In this connection it may be interesting also to note that the great majority of cellar-winterers use the ordinary summer hive-entrances. So long as we used such entrances in our cellar we had excellent results in wintering.

We would not go so far as to say that Fig. 2 would probably prove that the bees in the cellar should have no ventilation, for one straw does not show which way the wind blows; but in view of the various reports we feel that an excess of ventilation, with either weak or strong colonies, does no real good, but, on the contrary, may be the cause of severe loss.

Fig. 4 shows our method of carrying our bees out of the cellar. It consists of two side rails secured by two cross-pieces with four short legs, put together as shown in the illustration. The side rails in the one we use are only 2 inches wide by ¼ thick. The legs should be short so as to make it easy to get in and out of cellars and over obstructions. Two men can easily carry out five weak colonies or three strong ones, and both be free to walk and lift it to the best possible advantage. On arrival at the point where the colonies are to be distributed, the stretcher, so to speak, is set down on its four legs, when each man picks up a hive and stations it on its stand. When unloaded, the men go back and pick up another load. This hive-carrier is used by several prominent bee-keepers.. The one here shown is modeled after the one suggested by G. C. Greiner.

Do not tell Dr. Miller, but this carrier is far ahead of his scheme of two men carrying out one colony with a rope. Granted that his colonies are heavy and strong, two men can carry three as easily as they can carry one in his way.

There is one advantage about the shut-in plan. It enables one to determine definitely the *proportionate* loss for each colony. In the case of the exhibit in Fig. 2 the comparison is very marked.

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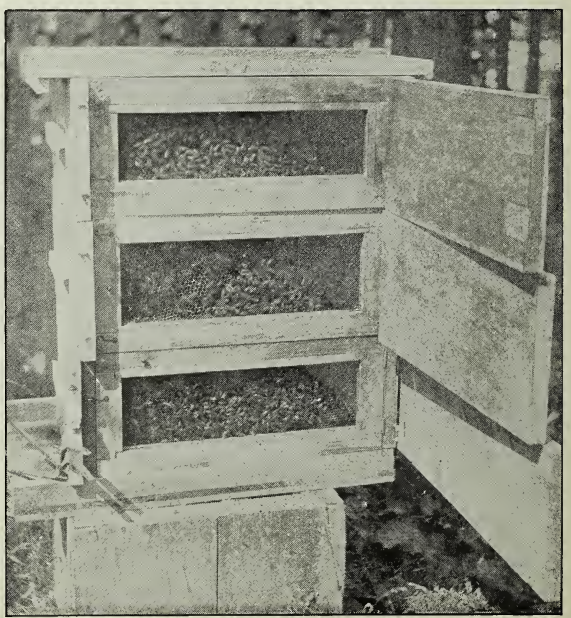
DANZENBAKER FRAMES HANDLED FROM THE SIDES OF THE HIVE.

I send you two pictures of some hives I have. The engraving shows my hive remodeled to combine the American method of working over the top or of whole stories, and the Ger-



A DANZENBAKER HIVE ARRANGED TO BE OPENED AT THE SIDE.

man principle of working from the side. It makes a good observation hive.

You can see the tongs as used in Germany.

Massillon, Ohio, Oct. 6. E. A. NEWELL.

## WAX-RENDERING.

### The Unheated vs. the Hot-water Presses; the Strength of the Screw.

BY J. J. RAPP.

I have read H. H. Root's articles on wax-making, in which he has demonstrated nicely that the new machine is within two per cent of being as effective as the German wax-press. His conclusions are erroneons and misleading because they are based on the work of the German press instead of on the actual per cent of wax remaining in the slumgum. We can say with safety that one process is better than another, but we can not say how efficient our best appliances are unless we know our final percentage of loss.

The appearance of refuse containing less than 35 per cent of wax is so misleading that no one without much experience can divide it into more than three grades—that above 25 per cent as containing some wax; that above 20 per cent as containing a little wax, and the rest as clean. This is due to the fact that the cocoons and refuse hold the wax like a sponge, and it is only when they are saturated with it that they cohere more or less strongly, making the refuse hard or lumpy; and it is only when there is more wax present than they can absorb that we have streaks of wax showing in the lumps.

It is plain, from the nature of the material, that nothing but pressure will remove the wax, and we shall be successful just in proportion to the pressure exerted.

The unheated press you described is right in principle. All you need is a screw capable of exerting a pressure of 100 pounds or more to the square inch instead of the few pounds possible, as now constructed. I use a hot-water press with a 20-ton screw on a surface of 175 square inches, thus getting theoretically a pressure of 200 pounds or more to the square inch, and have worked many tons, both of old comb and slumgum previously worked by all the various processes, and have made during the past year 3600 pounds of wax from such material. The intermittent pressure easily obtained with a screw is a great advantage in a hot-water press, because the wax, when expressed, rises to the surface, and water takes its place when the pressure is removed, ready to carry another portion of wax with it when pressure is again applied. This is due to the elasticity of the refuse, which, when relieved, expands and absorbs a portion of water to take the place of the wax and water formerly expressed.

The hot water keeps the wax liquid, and the press can be tightened at intervals for two or three hours, for it is only after this time that the material ceases to yield, showing that the material is very reluctant to yield up its liquid portion, and also showing why a hot-water press is superior to any other, since any dry press must necessarily chill in a few minutes, giving no time for the gradual exudation of the wax, and no advantage from slacking the pressure, because we have no liquid to be taken up again. Material worked in a dry press similar to mine yielded in the hot-water press 12 per cent of wax, showing the loss in a press many times more powerful than the German wax-press. I have handled several lots of refuse previously worked in a German press, and worked cleaner than by any process in common use.

The lot yielding the least wax was worked twice through a German wax-press, then yielded 16 per cent of wax. Suppose the third lot in H. H. R.'s experiment to be 100 pounds of very old brood-combs, and that he secured 40 pounds of wax, the relative efficiency of the three presses would be 78, 80.6, and 100 per cent, leaving still an undetermined percentage in the refuse, and a gain of 9.6 pounds at one treatment over his three treatments.

The 300-pound producer would lose 72 pounds that was obtainable, worth $20.16 instead of $2.50—surely an amount sufficient to justify him in getting better appliances.

Ventura, Cal., Jan. 31.

[I was afraid that some one would think the German wax-press as we used it would still leave a great percentage of waste, and so I stated on page 104 that the slumgum taken out after the second rendering in the unheated press was then melted up again, and pressed *repeatedly* in the German press, even after wax had ceased to come from the spout. No matter how little wax is left in the slumgum, if it is gone over again in the German press a little will come out each time; but, as explained, we kept working over this refuse long after wax had ceased to run, so that nothing but hot water caused by the condensation of the steam came out. I am well aware of the fact that the German press as it is generally used is not an entirely satisfactory machine; but, so far as we have been able to learn, the trouble in every case has been caused by carelessness in reading directions. Too many producers in using the German press do not wait long enough before applying pressure; that is, if they follow the plan of melting up the comb in the press they very often begin to apply the pressure as soon as the wax begins to run out of the spout, and this means that not all of the comb is yet thoroughly heated. Or, the producer stops the work too soon in the effort to save time, and, after the refuse is cold, he fingers it over, and, not being able to see any wax, imagines that he has done thorough work, while, as an actual fact, very often from 8 to 20 per cent of wax remains. But, as stated, we did not use the German press in this way, but kept at it repeatedly until every bit of wax *had* run out that *would* run out.

However, since we have given no absolute

proof, any one may still maintain that we were mistaken as to the thoroughness with which we did the work in the German press. So, in order to give absolute proof of the thoroughness of our work, we have gone over the ground again. We selected a barrel of comb which was old—a very fair material with which to work. We do not believe in making tests with comb that is almost new or with very small quantities, such as a few pounds, for the only real way to get at the correct results is to make the tests on a large scale. This comb weighed 130 pounds net. There were a few small pieces of wax mixed in with this, which in all would amount to possibly two or three pounds; that is, this much wax was free, in the form of small pieces. There was also a small part of the comb in the barrel which contained honey.

We first ran the contents of this barrel through the little unheated press, obtaining 62 pounds of beautiful bright yellow wax in a total time of 3½ hours. This included the time of melting up, pressing, and every thing. The writer did the work himself, and so can vouch for the truthfulness of the figures. We then melted up the refuse again and went through with the same operation, although pressing nearly twice as much at a time, so that this second rendering took only 1½ hours. Two pounds of nice wax was obtained. The total time of rendering the 64 pounds of wax was 5 hours. So far, we have taken no account of the percentage of wax still left in the refuse.

The next day we took our large hot-water press, with which we have rendered a good deal of wax, and went over the refuse for the third time, simply to ascertain the amount of waste. The refuse was put into three large burlap sacks and all put into the press, each sack being separated from the rest by a cleated division-board. Water was then poured in and heated up so that it began to boil about nine o'clock in the morning. After allowing it to boil about an hour the pressure was applied slowly until the screw was down as far as we could possibly turn it. It was left down for about half an hour, then raised for ten minutes, and then turned slowly down again. This was kept up until five o'clock in the afternoon, the water meanwhile boiling all the time We have used such a hot-water press considerably for the last two or three years, and are quite familiar with that plan of working. It will be seen that the refuse was kept under boiling water for eight hours, and was subjected to great pressure nearly all the time, although the screw was, of course, raised for ten minutes about every half-hour to allow the cheeses to swell up with water.

Now for the result. We obtained just exactly one pound and six ounces of wax, which was, of course, of a very dark color, due to the excessive heat and the long time which it had remained in the metal hot-water press. The percentage of loss, then, after the two renderings in the little open press was just exactly 2.1. You will see further that these results agree very closely with the results which were given in Gleanings.

By being careful, the percentage of loss after two treatments can be kept not over 2 per cent. But if any one wishes to take the time a third treatment will reduce the final loss to less than 1 per cent.

It is true that the screw which we used in this press looks very small and inadequate, for the engravings in Gleanings are not quite exact, for the reason that the engravers ran their tool too close in trimming off along the screw, which makes it look very slender. We have never had any trouble, however, about the screws bending; and as for the pressure to be exerted, we think they are ample.

To give the figures, however, we would say that one man using the short double 7½-inch lever at the top of the screw is able to exert a pressure of 111 pounds to the square inch. As nearly as we can get at it the actual pressure exerted is 15,079 pounds, or in round numbers 7½ tons. The cheese which we use contains 135.8 inches, so that the pressure per square inch is 111 pounds as we have stated.—H. H. Root.]

## QUEEN-REARING.

### Some Methods of Cell-starting; Inducing Supersedure by Clipping Queen's Leg; a Queen-excluding Cage for Starting Cells.

BY E. F. ATWATER.

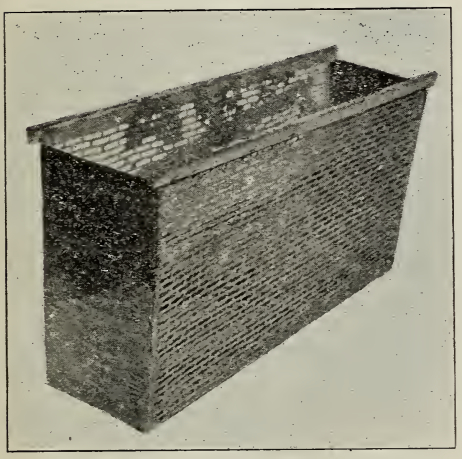
In queen-rearing I usually prefer some simple and fairly positive method of cell-starting. Sometimes I have good success with the Swarthmore "swarm-box;" at other times a strong colony is moved to a new stand after shaking off plenty of nurse-bees at the old stand, where a hive containing frames of pollen, honey, and two Pratt holding-frames and one frame of open brood receives them. This operation is performed in the afternoon or evening. Next morning we remove the brood from this now hopelessly queenless lot of bees, and graft the cells with larvæ from our best breeder. Sometimes an extracting-super with its combs and a big force of bees is set off on to a screened rim, water poured into one of the combs, then about six hours later we give these confined queenless bees about 32 cells to start. Cells started by any of these methods are best finished in a queen-right colony—the queen, unless failing, being separated from the cells by queen-excluding metal.

Early in the season we seldom have colonies so strong that the queen-cells should be finished in an upper story above an excluder. We can cut off one of the *legs* of the queen, which causes supersedure in about five out of six cases; but here queens so treated never do as good work at laying, and sooner or later come up missing. If the leg-clipping plan of inducing supersedure is adopted, the queens should be operated on, about a week before their colonies will be called on for

cell-furnishing. That method should be popular with modern bee-keeping M. D.'s.

We may confine the queen on one or more frames of brood at one side of the hive, the cells being completed on the other side. To do this we must use a tight-fitting queen-excluding division-board, making *sure* that the queen can not pass around it at any point, or our cells may be destroyed. Or, we may saw grooves in the ends of the hive-body, cutting the division-board of perforated zinc of such size that the ends will fit in these grooves; but even then the bottom is to be provided for.

With all these points in view I constructed my cell-trough several years ago, and after extensive trial I can say that it is *very* effectual and exceedingly handy. Reference to



ATWATER'S CELL-TROUGH FOR GETTING QUEEN-CELLS STARTED.

the cut will explain the construction. It is $18\frac{3}{16}$ inches long, $9\frac{3}{4}$ deep, wide enough to hold three frames easily. The ends are of tin, soldered to the sides of queen-excluding zinc, while the bottom is a thin board to which sides and ends are nailed. The top-bars, on which it hangs, are $\frac{1}{4}$x$\frac{1}{2}$x19, nailed to the upper edges of the queen-excluding zinc.

To use, go to a strong colony, take out four frames, two of them hatching brood; hang the cell-trough in the middle of the hive. Inside the cell-trough put a frame of emerging brood, if possible at each side, being *sure* that the queen is not in the cell-trough. Close the hive; and as soon as the bees are clustered in the vacant space in the middle of the cell-trough, put in a frame of started cell-cups from your cell-starters. Here they may remain for ten or eleven days, when they should be distributed to nuclei or be caged.

This device will fit in any standard hive, and is always available. Of course, use a small quilt over the cell-trough, to prevent the queen from entering it at the top.

To secure fine queens from early cells there are some essentials not generally emphasized as they should be. Select several colonies, some time before they will have to work on the cells. Feed, if the fields are not furnishing an ample supply. Every few days exchange their unsealed brood for frames of emerging brood from other colonies. As soon as your selected colonies are running over with nurse-bees, put in the cell-trough and give them a supply of cells to finish. Watch that they do not swarm. The queens so reared will be equal to the best.

Meridian, Idaho.

[The Atwater cell-trough is in principle very much like a plan that we describe in our little book, "Modern Queen-rearing," with the exception that we used two tight-fitting perforated-zinc division-boards that reach from bottom to cover. The principle is the same, and is all right. Mr. Atwater shows he is familiar with the general subject of queen-rearing by the references he makes to the various methods, all of which have some good features to recommend them.—ED.]

## EXPERIMENTS WITH BABY NUCLEI.

### Shall this Method of Fertilizing Queens be Perpetuated?

BY ROBERT B. M'CAIN.

[The following article, as will be seen by the dates which follow, was written over a year ago; but it was mislaid, and not discovered until lately. What the writer has to say, therefore, relates to the small Pratt baby nuclei, then in use, and not to the larger twin mating-boxes that are used at the present time. Mr. McCain's experience with these small mating-boxes was about the same as that of most of the others who tested them. But there were a few who made quite a success of them, and possibly are using them today in preference to any thing else. Under some conditions they will mate queens very satisfactorily; but, of course, they should never be used to rear cells.

The larger twin mating-boxes have a capacity of three frames, each frame being a third the size of the Langstroth in brood capacity. The aggregate comb surface of the two bunches of bees that are practically one is very nearly three Langstroth frames.—ED.]

The season of 1905 marks the time of the introduction, in a general way, of the baby-nucleus plan of queen-fertilization. A most important question to be decided before a new season of queen-breeding begins is, "Shall this method be perpetuated?" Obviously the question must be decided on the merits of the system under severe practical tests. Many bee-keepers have been prejudiced against the use of the system; more have seemed to misunderstand it. But neither prejudice nor ignorance should have weight in determining the value of new discoveries or improvements in methods of procedure in any department of human activity.

After a careful trial of the system, extending through the entire season of 1905, the writer has been driven, against his will, to feel that the system ought to be condemned.

One reason for making this statement is that the system is not only out of harmony with but is, to some extent, contrary to the natural economy of the bee-hive. Bee-masters must work with and not against the in-

stincts of the bees. All valuable improvements that have ever been made in bee culture have been founded upon the discovery of some law of action in the nature of the bee and the adaptation of man's plan of action to conform to that law, and to encourage the bees to increase their activity in accordance with the law. Any method of management in any department of bee culture which goes contrary to the nature and instincts of the bees is, in theory, therefore, doomed to failure.

In this baby-nucleus plan of queen fertilization, the bees are very reluctant—in fact, must be forced—to fill the little frames either with brood or honey preparatory to fitting out the boxes for the reception of virgins. They are induced with great difficulty to remain in the boxes even after they have been established in them by long confinement; and when they have been induced to take up an abode there, they find themselves too few in numbers to maintain "body heat" sufficient for healthy brood-rearing, and too weak to gather food. Moreover, they are an easy prey to robbers. When the bee-keeper has established his baby mating-boxes he has destroyed almost the last semblance of colony life among those bees. He has made a handful of bees homeless and heartless. They have become discouraged and demoralized so that the actions both of queens and bees are distinctly different from those of a normal colony. They must be fed to keep them from starving. They are on the down grade of existence from the very beginning, and have to be reinforced with young bees continually. It is not common for these nuclei to increase in strength, even though they are fed.

### BETTER TO HAVE THE NATURAL CONDITIONS OF LARGER AND STRONGER NUCLEI.

It is not sufficient to say that queens can be fertilized from these boxes. It is true that any one who will exercise ordinary care in manipulating them will get fair results. But that is not a sufficient guarantee of the value of the system. Emphasis should be laid with increasing force upon the necessity of having strong colonies for best results in all departments of bee culture. It is manifestly unnecessary to employ strong colonies to mate the queens if it can be done equally well with a smaller number of bees. This is the theory on which the advocates of baby nuclei have proceeded. But, in my opinion, they have made the fatal mistake of carrying the theory to an extreme.

Every practical bee-keeper knows that he can divide his colonies down to pretty small fractions of their original strength, in favorable seasons, without destroying colony life; but in the practice of the baby-nucleus system the limit is passed. Colony life is destroyed, body heat is wanting, brood-rearing in precarious and uncertain, and the constitution and life of the queen, with all that that means to future generations, are put in jeopardy.

To say that good queens have been mated in this way is to pass a high compliment on their constitutions; but it does not furnish a sufficient reason to continue the system to the detriment of that same constitution.

The contrast between baby nuclei and nuclei composed of two L. frames operated alongside them throughout the season was so strikingly in favor of the latter that it would be hard to induce the writer to try the babies again. In nuclei composed of one or more L. frames, colony life progressed rapidly. Instead of killing off a lot of worker bees to get a few queens mated, as it was in the case of the baby nuclei, housekeeping and brood-rearing progressed in thriving condition. At the close of the season a few of these nuclei were easily united into colonies and prepared for winter. With this method of forming nuclei, all parts of the bee-keeper's equipment are interchangeable. There is less fuss, and less expenditure of the energy of the bee-man, and a saving of life among the bees.

A better nucleus hive, in the opinion of the writer, is one that will hold two two-frame nuclei, one on either side of a thin wooden partition. In hives of this description it was astonishing how fast the nuclei built up. Conditions were most favorable for all the activities of the hive, and there were two queens to lay a good portion of the time. There was less swarming out, less robbing, and fewer queens lost.

Oswego, Ill.

## THE MARKETING OF HONEY.

### Are Commission Men Honest? How to Produce Fancy Honey and Pack it; the Importance of Uniform Grading.

BY WM. W. CASE.

*Mr. Root:*—I do not see how you can reconcile your statements on page 235 concerning commission merchants. First you state that the one commission man who *did* know the consignment of honey was on the way notified all the rest of the commission men and dealers in the city, and that they all conspired as a unit, to the effect that none of them would pay real value for the honey, but that, on going to another city, he made one honest sale, the fact of which becoming known to the dealers of the first city, they immediately conspired together and prevented said dealer from any further honest dealing. You then state that you believe the majority of commission men are honest. As you state it, I do not see where you can find a quarter ounce of honest man in either "gang" of both cities; and as it is plain that these two "gangs" worked together is it not the inference that they would have followed the same man to every city he would have visited, with like results?

When I am lucky enough to have it, one firm buys all of my light honey, and they are willing to and *do* pay me more for my honey delivered at my depot than the shark merchants quote as bringing on commission in the same city.

I have never shipped a case of honey on

commission—never will—and have never had any dispute in settling up, the nearest being a deduction of two pounds shortage in a shipment of three dozen cases, for which the receiver apologized.

I think every one else can, if he will, dispose of his honey in the same way I do. One trouble is, so many do not pack their honey well. Generally it is a case of don't know how either in producing or packing, or both. A man who tiers up comb honey from spring till fall will never be satisfied with the price he receives; neither will the purchaser be satisfied with the price he pays.

A few years ago a party sold his honey crop to the same party to whom I sell, stating it to be just as good as mine. It took several weeks to adjust the price on that lot of honey.

I recently inspected a case of honey on the counter of a grocery. Out of 24 sections there was just one that I would class as A1. The others were well enough filled, but they contained every thing between apple bloom and aster, and "foot-prints" considerably thicker than the cappings, and all had a general "dirty" appearance. Now, had every section been removed as soon as sealed, and properly cared for, its appearance would have been its own recommendation. "Calico honey," when *clean*, is not repulsive; but when thickly soiled it tempts neither eye nor appetite. Where at all possible the extractor should be used before a new flow of different-appearing honey so as to keep the contents of every package uniform in color, weight, and quality.

An apiarian that can not make 90 per cent of his section honey grade A1 to fancy has never learned his trade.

Honey should be taken from the hive just as soon as sealed, every section held to the light to be sure it contains no pollen to feed worms, and then stored in a tight cupboard in a very warm dry room (the kitchen is just right if the ladies will agree to the arrangement), and kept tightly closed, so that, when the door is opened, a gush of delicious aroma greets the nostrils and declares the delicacy of the contents. It usually takes from four to six weeks to cure half a ton of honey so stored; but when it *is* cured it is of just as fine quality as that delicious morsel occasionally found when transferring, that the bees have cured and kept perfectly for probably a dozen years—the most toothsome morsel mortal man ever placed in contact with his palate—a rival to the "ambrosia fit only for the ancient gods." Honey so cared for and treated will sell, where known, for cash at full or considerably above quotations on the open market.

It is never any trouble to sell a good article if all parties know it to be good. In order to sell a crop of 25, 50, 100, or 1000 cases of honey, carefully pack three or four cases as samples, neither better nor worse than best grade; and, while the quality of the whole case is the same, be very sure that the four sections next to the glass are as nearly alike as four peas in color and finish. If packed in cartons, leave one section next to the glass open so as to show the exact quality of the contents; also one open section inside of the package for inspection, placing both empty cartons under the lid. Now ship a sample case to two or three reliable dealers in fine groceries, not commission men; guarantee every package as good as sample, and ask their best offer on the same F. O. B.; and if your honey is what it should be you will get an answer that will surprise you, and that very agreeably.

In making large shipments of comb honey, crate six to nine cases together and load on cars so that the face of the sections is parallel with the side of the car, and you will have no more breakage than from a carload of pig iron. Be very careful to stencil exact quality, weight, and grade, on every case, and never try to palm off a poor quality for a good one. It will not work with honey, at any rate. Here honesty is the only policy.

Frenchtown, N. J.

[Our correspondent draws attention to the fact that there is an omission in our original statement. We should have stated that we believe the great majority, if not all the commission men *who furnish quotations* for this journal are honest. The italicized words were the ones omitted. This would reduce the number down to a select few. No, we did not mean to convey the impression that the majority of *all* commission men, whether they quote for any bee-paper or not, are reliable. We should be inclined to the opinion that the majority of them are men who should be avoided.

The suggestions made by Mr. Case on how to pack honey for shipment, and, in general, how to prepare it for market, are excellent. One who knows how to take care of these two important requisites will, as a rule, have very little trouble with the honey-buyers who quote *in these columns*. We italicize the last three words so as not to be misunderstood.

We also wish to indorse another suggestion—to sell honey outright on sample rather than to depend on commission sales. If the buyer knows your honey, knows that it will be equal to the sample, he will be pretty sure to want those goods, even if he has to pay a little above the market price to get them.

*It is a fact to be deplored, that the great majority of those who ship honey to the cities either do not know how to grade and how to pack it, or else are woefully careless.* We have purposely put this in italics, and yet we are aware of the fact that there may be some who will question the accuracy of the statement. But the big buyers in the country, as well as commission men generally, we are confident, will vouch for it. Some think they know how to prepare honey for the market, but they do not, just the same, and are compelled to take a cent or two less than the same goods would actually bring if they were properly graded and packed. Penny wise is sometimes pound foolish.

We have harped on this statement many a time, but it seems to be necessary to keep

repeating it. Perhaps some of you may say, "Then you tell us how." Enclose one-cent postage-stamp and we will send a leaflet that will explain. Or read carefully the suggestions made by Mr. Case, who is no novice in this business.—ED.]

## LOCATION.

### How Long Must Bees be Confined to Cause Them to Mark Their Locations Anew? Storing Comb Honey.

BY WM. M. WHITNEY.

*Mr. Editor:*—High authority on apiculture, giving instruction in making artificial colonies by division, says that a nucleus colony, if put into the cellar or other dark place for three days from the time it is made, may be placed in any part of the yard thereafter without danger of bees returning to the old stand, which is correct. They might be shut in their hive, and be moved to the stand they were to occupy, if the weather were cool enough, and be opened at night of the second day with the same result.

But in the face of these facts, and of the experience of every practical bee-keeper on giving instructions for cellaring bees for the winter, he tells the apiarist to note location of each hive and place them in the cellar in such order that they may be removed in the spring and be put on the summer stands in the same order as in the fall before cellaring, thus avoiding confusion among the bees in marking their location when the first flight is taken. Some one says to me, who must entertain the same notion, "Don't you know that bees will continne to go back, more or less, to the old stand during the summer, especially if the bottom-board is left in its place?" Well, do we not all know that bees from all parts of the yard will visit that bottom-board if the weather is warm, especially if the sun shines upon it, to evolve the scent of the wax adhering to it? The same thing occurred in my yard last summer at an open hive left on the summer stand, in which the colony had died the winter before. Had that bottom-board or the hive been rods away from the yard, the result would have been just the same.

I venture the assertion, without fear of successful contradiction, that there is not a normal colony of bees in existence, which, if kept in its hive by bad weather or from any other cause for the space of two or three days, that will not mark its location anew on the first opportunity for a flight. If one wishes to change the location of any colony in the yard, and takes the opportunity to do so during a time of weather unpleasant enough to keep the bees from flying, he can do so just the same as with a nucleus, and the bees will mark their new location without any unpleasant results. If this view of the matter of the habits of bees in this particular is correct, what becomes of the theory that, on removal from the cellar, each colony should be put upon the stand it occupied the fall before? Does it not seem to the practical observing apiarist as most doubtful—in fact, extremely mythical?

Again, another expert in apiculture on being asked, "What shall I do in storing frames of comb honey which I wish to use in the spring—leave them in the honey-house or put them in the cellar?" the answer was, "In the cellar, if you have no better place." That "if you have no better place" was well said; but the experience of people in general is that a worse place can not be found than nine out of ten cellars of the country. We all know that tons of the very best honey have been spoiled by being put into the basements of commission houses and stores, and in cellars of homes. It would have been just like me to have said, "If your honey-house is dry, and you have no better place to which to transfer it than the cellar, leave it in the honey-house." I have kept the finest comb honey in the honey-house at Lake Geneva during the winter, through zero weather, taking it out in the spring in as fine condition as when put into storage. The house was dry, and the honey well ripened. Of course, warm storage is considered safer.

Were Dr. Miller asked where would be the best place to store comb honey, his answer would be, "Put it in some warm dry place, secure from injury by mice, etc.," and it would have been correct; but the answer given above was by a man who is pestered to death with all sorts of questions, asked over and over again until I should think he would go wild—dream about bees, or have the nightmare—when most of the problems could be solved at home were the questioner provided with one or more of the standard works on bee-keeping, and a subscriber to one or more journals upon the subje t. He who has not interest enough in the business to do this should go out of it.

Evanston, Ill.

[Most bee-keepers at the present day consider that, after bees have been taken out of a cellar in the spring, they can be put anywhere—in the new or old location—and it will make no difference, and we believe they are right.—ED.]

## EUROPEAN FOUL BROOD.

### The Alexander Treatment a Success; the Italians Found More Able to Resist the Disease than the Hybrids.

BY WILL A. HORST.

It may be of interest to many of the readers of GLEANINGS to hear something more concerning the effectiveness of the Alexander treatment as a cure for black brood, or, as it is now called, European foul brood. During the past summer I had ample opportunity for applying the treatment to my apiary of eighteen colonies. Having been absent from home during the winter and spring, I was unable to examine the bees before the first of

June. My examination revealed a discouraging state of affairs. Sixteen out of the eighteen colonies were badly diseased. This rapid spread of the disease was undoubtedly due to the fact that the bees had, early in the spring, engaged in a general melée and overpowered two diseased colonies. The two colonies remaining healthy were pure Italians—the only pure stock in the apiary. One of these, a red clover, remained healthy throughout the season. The other, a golden, along toward the middle of June showed a very few diseased cells, but later on entirely rid itself of the disease, without treatment. The honey-flow throughout the summer was very light; in fact, the bees did nothing more than make a living up to the fall flow.

The sixteen diseased colonies were doubled back to eight fair-sized ones, and all queens were removed and killed except one, as I wished to replace them by Italians, being now thoroughly convinced that the Italians were far more able to resist the disease than the hybrids. The hybrid queen which I kept was caged, to be used later as a test case.

I then followed the treatment as given in GLEANINGS, cutting out all queen-cells at the end of nine days, repeating the operation two days later. I had previously made arrangements to have a sufficient number of young Italian queens sent to me when needed.

At the end of 25 days most of the colonies had their brood-nests cleaned up as slick as a pin. I say most of them, for such was not the case with all. Right here it may be noted that individuality plays an important factor. Some colonies, which previously had a very large amount of diseased brood, cleaned up their cells so that they shone like mirrors, while others, even stronger in numbers, and with less disease, left a scattering of capped-over diseased cells throughout the brood-nest. However, with a little assistance they were all apparently cleaned up at the end of 30 days, young laying queens were introduced, and further developements anxiously awaited.

Ten days after the queens began laying, the brood was carefully examined. Those colonies which had shown the greatest aptitude for housecleaning now had as healthy a lot of brood as one could wish to see. With these the cure was complete. But those which had shown some hesitancy in cleaning up showed here and there a few diseased larvæ.

It was into one of the latter colonies that the before-mentioned hybrid queen had been introduced. But as soon as the young Italians became old enough to take charge of affairs in the brood-nest, things took a different turn. The third lot of brood was entirely healthy, and I have not seen a sign of the disease in any of the treated colonies since. But not so with the hybrid colony. The disease stayed, and was on the increase until the treatment was repeated and a red-clover Italian queen substituted. The brood will be carefully watched this coming summer to see if the disease reappears, or if the colonies (now all pure Italians) will again contract it from some outside source.

It is a source of great comfort to bee-keepers to know that this fell disease, which seems to be advancing throughout the country with such rapid strides, can be dealt with so effectively and economically; and the bee-keeping fraternity surely should feel grateful to the originator of this treatment, and to GLEANINGS for placing it at their disposal.

Crown Point, Ind.

[The suggestion made in the foregoing may possibly explain why some have failed with the Alexander plan of treating European foul brood (black brood) and that is, three weeks or even twenty-five days may not be long enough for the colonies to polish up their cells or otherwise disinfect them; and it would seem that, in view of what our correspondent says, it might be wise to keep the colony queenless until such time as the cells fairly glisten. It may be twenty-one days or it may be a whole month. Then do not forget the other important requisite, to have pure Italian blood.

We have received some reports favorable and some unfavorable regarding this treatment; and it is so simple to apply that possibly some of our subscribers, in sheer desperation, would be willing to grasp at a straw. But we are frank to confess that, if we had black brood in our yard, we would follow the advice of the York State Inspectors, to shake on foundation, *a la* McEvoy, and then shake again. And we would go further. We would dequeen and keep the bees queenless for three weeks, thus combining the McEvoy and the Alexander treatments together. When supplying a new queen we would put in young and vigorous Italians, which we would rear at an out-yard and thus be ready to supply all colonies under treatment.—ED.]

## HIVES.

### What Style is Best for a Farmer Bee-keeper?

BY B. W. FISHER.

*Dr. C. C. Miller:*—I wish to ask many questions, as I have purchased four very large hives with lots of bees—yes, the largest hives and most bees in them I have ever seen. But I don't like the hives, as they are unhandy, open at the side. I have nine hives with bees in, eight-frame Dovetailed hives; but I think they are too small, and require too much attention.

What hive would you recommend for a farmer on the let-alone plan, or not that, but one giving the best results with the least manipulation? I see The A. I. Root Co. catalogs a divisible-brood-chamber hive, which in ten-frame size I think would suit me, if there is no drawback to it. I don't know any thing about it, so I come to you for your advice and opinion.

Then the Dadants advocate a large hive with deep frames. I don't think I should

like them; still they may be best. I know you don't advise the Danzenbaker. I have been thinking of a hive just 20 inches square, outside measure. This would take the regular Langstroth frame. But I would want closed-end self-spacing frames without the V edge, with two division-boards to each hive, ⅞ thick, with self-spacing end-bars to them, supers to match. For extracting, frames 5⅞ deep, closed-end frames, and two division-boards. Please help me by pointing out all undesirable features, and also the advantages of such a hive. I am compelled to purchase some hives and supplies, and I am not certain which is best, and can not afford to make any mistake.

Phillippi, W. Va.

[Dr. Miller replies:]

It would be easier to make reply if you should ask about getting the most honey possible from each colony, without regard to the amount of labor on the part of the bee-keeper. Most of the study goes in that direction; yet I think some attention should be paid to those who are, like yourself, desiring to have the bees mostly take care of themselves.

The first requisite relates to size. The hive must be large; and seeing that you are working for extracted honey, there is little danger of having it too large. A strong colony will not be disturbed by one or more frames that are not occupied; but it may be damaged no little if it has a single frame less than its queen would supply with brood.

The divisible brood-chamber seems to strike you favorably. The chief advantage of a divisible brood-chamber lies in the fact of its elasticity. You can have your hive small or large, according as you use one story or more than one story. When you have a small colony, one story is enough for it; when it becomes stronger you can add a story, making the hive larger or smaller according to need. But there you are, getting directly away from the let-alone plan, for it might need pretty close attention to make the hive smaller or larger at the right time. The safe way to use such a hive would be to keep it two-story all the time. But in that case, what advantage would there be in the divisible feature? No one claims that two shallow frames, one directly above the other, are any better than a single deep frame of the same capacity, if the two are to be used always in that way; and it can not be denied that at least at times there is a disadvantage in having a space right in the middle of the brood-nest. Besides, it costs more for the two shallow stories than for the single deep one.*

I don't know what your objections are to the Dadants' deep frames; but if you are to use two sets of shallow frames permanently, it certainly looks an advantage to have them made into a single set of deep ones. Besides, the success of such bee-keepers as the Dadants with these frames, and the small amount of swarming they have with them, are things not to be lightly esteemed.

*They are listed at the same price in the supply catalogs.—ED.

Now as to the disadvantages and advantages of your proposed 20-inch-square hive (should it not be at least 20⅛ with ⅛ stuff?). It would hold 12 Langstroth frames—beside the dummies—a very good size for the let-alone business; and, indeed, some who do not go on the let-alone plan would not consider it any too large. The closed-end frames with the dummies on the two sides quite give the advantage of a double-walled hive. The disadvantage of the closed-end frames would be the danger of killing bees every time you put the frames in place; but that would not count for a great deal when the hive is not often to be opened.

The Dadant or the Jumbo with extra-deep Langstroth frames would give you the same capacity with fewer frames to handle, and the deeper frames would have some advantages for brood-rearing, although that would count for more further north. On the other hand, the 12-frame Langstroth has the advantage that it was thought out by yourself.

Really it's a hard thing to say which would be best—the hive you have proposed, or the Dadant or the Jumbo. Either of them ought to suit you well; but I don't believe the thing for you is the divisible brood-chamber.

Marengo, Ill. C. C. MILLER.

[There will be a series of articles soon from Mr. J. E. Hand that will set forth the advantages of the divisible-brood-chamber hive. We advise Mr. Fisher to wait till he has read this series of articles before he builds a special odd-sized hive—not because they will discourage the divisible-brood-chamber feature, but because they may enable him to build more intelligently.—ED.]


### STARTERS MADE OF STRIPS OF OLD COMB.

Thinking to interest some of the small bee-keepers like myself I wish to describe a comb-guide for brood-frames that pleases me better than any thing else for the purpose I have ever used. It is simply strips of old brood-combs, and the way I use them is like this: I take old tough brood-combs and cut them in strips one inch or even less in width, being careful to cut them square—that is, not on a bevel. I use a very thin knife and straight-edge. The older and tougher the comb the better it pleases me; and to fasten them in the frames I proceed as follows:

Stand your frame bottom up on a bench or board, then with a spoon pour some melted wax with a little resin added, having it quite hot, along the top-bar the whole length where the comb is to be attached. This be-

ing done, place the strip of comb in position, pressing it into the melted wax, care being taken that the comb shall come in the middle of the top-bar.

Right here let me say that for one I have no use for frames with grooves and wedge device, not even if I were to use full sheets of foundation, as I consider the melted-wax plan far ahead for several reasons.

The strips of old combs being tough, and as they are at once securely attached to the top-bar by the bees, they very seldom break loose from their fastenings, and with me they prove far more substantial and satisfactory than strips of comb foundation. Of course, if I were building up and wanted lots of combs at short notice I would use full sheets of foundation; but as it is I always have more combs than I need, for I manage to prevent swarming by allowing the bees to build comb in their brood-nest.

D. S. HALL.

South Cabot, Vt., Feb. 4, 1907.

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### TO TAKE A SWARM OUT OF THE BODY OF A TREE WITHOUT CUTTING THE WHOLE TREE DOWN.

I notice in Aug. 1st GLEANINGS, 1906, that Mr. Fisher gives instructions for transferring bees from trees or other natural abodes. Please tell us how one is to construct a platform away up in a tree. I don't understand how one could take a nucleus hive up in a tree, and, after securing the colony already in the tree, let it down with safety. It would be full of bees, and would be very awkward to handle so far from the ground; besides, the bees in the tree would be apt to sting.

Stanley, W. Va. B. G. ELEFRITZ.

[Where a swarm is in a hollow limb, the limb may be sawn off and then let down by means of a rope in the hands of some one on the ground, the rope passing over some other limb. It is easy enough to get hives up in the air by means of this same rope, or to let a swarm down. It should be borne in mind that chopping next to the hollow where the bees are located will soon induce quiet so there will be no stinging.—ED.]

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### HONEY AND BUTTER; HONEY BREAD.

Mr. J. A. Green wonders why I wish to "freeze" the honey and butter together as suggested. Well, my object is quite different, probably, from what he had in mind. I want to get equal amounts of each, blended perfectly, because such a mixture is ahead of cod-liver-oil emulsion for thin anemic persons, and is highly recommended by some European doctors. They (the doctors) say cod-liver oil is not so useful, because it does not induce a free flow of saliva. Of course, both substances have to be warmed before mixing, and, if possible, should be hardened at once. Stirring helps the process.

Another food of like sort is honey bread, of which I have a loaf before me which is 6 months old. It has more honey in its make-up than flour, and tastes like good confectionery. It is very porous; and as it contains nothing whatever but honey and flour it is healthful and nutritious—just the thing for dyspeptics. The rising, I think, is ammonia; if not that, baking-powder. It was made by a firm in Vesey St., New York, who retail a loaf at 25 cents. Everybody likes it. Mr. Coggshall liked it so much he sent to New York for some so he could fill up on it just for once.—W. K. MORRISON.

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### SMALLER CROP SECURED WHEN EXCLUDERS WERE USED; THE ALEXANDER PLAN OF BUILDING UP WEAK COLONIES.

In looking over the item on page 232, Feb. 15, regarding queen-excluders, I would say I started keeping bees five or six years ago. The first year I ordered my supplies for the Langstroth hives. I ordered some queen-excluding metal, put it on some of my strongest colonies, and had very little surplus from them, but had a fairly good crop from the others without the excluders. In 1905 I had over 1600 sections from 23 hives, spring count, 8 of them being old box hives, and in only three sections had there been any brood at all. The year 1906 being a poor one I had only a little over 1400 sections from about 40 hives, and not one section had brood in it. I feel confident that, had I used excluders in 1905 and 1906, my yield would have been a great deal less. The only use I have for the excluders is in the spring, when I put the weak colonies over the strong ones as described by E. W. Alexander. I find it to be of great value in building up the weak colonies in the spring. W. G. ASBELL.

Sussex, N. B., Can., Feb. 19, 1907.

[Queen-excluders are scarcely ever used in the production of *comb* honey. It is only when extracted is produced that they are deemed necessary.—ED.]

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### BOTTOM STARTERS IN BROOD-FRAMES.

In my brood-frames, to make the bees build to the bottom-bar I put a narrow strip of foundation, and at the bottom also. I see many times that the bees build down to the bottom, then stop. What do you think of the plan? I use a narrow strip at the bottom of sections, with a large piece at the top. This makes the combs solid. S. D. BUELL.

Union City, Mich., Feb. 19.

[There is no objection to the plan of putting bottom starters in brood-frames except the labor. It would probably give solid combs as you say.—ED.]

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### WHICH DIRECTION SHALL A HIVE-ENTRANCE FACE?

Referring to Stray Straws, pages 155 and 156, hives facing north or south, I know it is the general practice to face south or east, but I wish to tell you of something I noticed last fall, and it impressed itself on my mind very forcibly before I read the Straw.

I bought two apiaries last May. They are located in a canyon running north and south.

Hives are standing north and south, with two entrances of about four inches, each one in the south end at the southeast corner, and the others in the north end at the northwest corner. I think that fully nine colonies out of every ten use the north entrance. It is evident that the bees prefer the north entrance, but why? I can think of only two things that would create a preference—sun and wind. Wind blows from two directions, south principally, north occasionally in spring and fall. The south wind is a mild coast breeze. The north wind, if from the desert, is *dry* and *sometimes very hard.*

Perris, Cal., Feb. 10. J. W. GEORGE.

[This is a question in which locality has every thing to do. While in most localities an east or south exposure would be preferred, yet in your locality if the strongest winds were from the south then the bees if given the choice would select the north entrance. —ED.]

### LOWER FREIGHT RATES.

"The South Texas Bee-keepers' Association met lately for business at the residence of Pres. E. J. Atchley, and by united effort on the part of the officers a reduction on freight rates from $1.85 per 100 lbs. on live bees in carload lots, down to 79 cts. per 100 lbs. to all points in Kansas, Missouri, Oklahoma, and other western points of the Ft. Worth & Denver R. R., and 81 cts. to Denver and intermediate points in Colorado, was secured. This makes a bright future for the bee industry of Southern Texas; and to get the old rate cut more than half gives cause of rejoicing. We have put in an application to the railroad company to the effect that we want a ruling to go along with the reduced freight, not to allow any one to load bees for shipment until such person first screens the car with wire cloth in such a manner as will not allow bees to escape from cars while in transit. We feel sure we shall get such ruling. The South Texas Ass'n was instrumental in getting a one-third reduction on bees shipped by express from Beeville to all points on Wells-Fargo lines, which reduction was later extended from other points. There are several cars of bees to go from Beeville this spring. This association also secured a lower local freight rate on honey several years ago."

The above notice was sent me by Pres. Atchley. N. E. FRANCE.

Platteville, Wis.

### APPLE CROP DOUBLED BY THE BEES; MOVING AN APIARY TO A SHELTERED LOCATION IN WINTER.

I obtained two colonies of bees to aid in fertilizing the blossoms in my orchard; and after reading the A B C of Bee Culture I got a regular chronic case of bee-fever. I expect to start right this coming spring. When I brought the two box hives home last April I put them under a Rome Beauty apple-tree which was about to bloom. The usual crop from this tree was from six to eight bushels of apples; but last year it bore fourteen bushels—enough difference to pay for the bees. Now, with some 700 fruit-trees it's no wonder that I have the bee-fever.

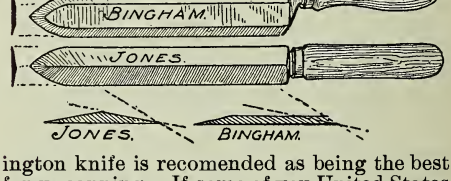
I want to find out about a good *location* (you see I got hold of one of the seemingly most important expressions of "bee-lore," thanks to GLEANINGS). The best place I have for locating my apiary for the summer months is about fifty yards up to perhaps a hundred from the best place to put them in winter. The summer location is a northern exposure with fine shade-trees—in fact, an ideal spot for the purpose. But the winter blasts are too strong here for bees, and the location best for winter would be too hot in the summer. Now, could there be any objection to moving bees that short distance, say late in November? Sometimes bees are dormant here for a little while, a week or two, and again they will fly day after day for weeks in winter.

Pilot Knob, Mo. OTTO LUEDDECKE.

[No objection at all, but why not put a fence around them to protect them from the wind?—ED.]

### UNCAPPING-KNIVES; THE CONSTRUCTION OF THE BLADE.

About a year ago GLEANINGS had something to say about getting out a better honey-knife. From my experience with honey-knives the past summer I don't wonder at you trying to get something better. I thought I would look at my A B C and see what you said about honey-knives, and I felt somewhat indignant when the Bingham-Hetherington knife is recomended as being the best for uncapping. If some of you United States people had sent over to Canada and got some of our knives, and used them in comparison with your make, you would not be a generation behind the times as regards honey-knives. What I refer to more particularly is the shape of the blade.




By the construction of the Bingham you have practically to scrape the cappings off the thick part of the knife in wading into the comb or you run into the same trouble your men who run circular saws would should they happen to have the back of the teeth of their saws project further than the points.

In regard to that thumb-rest, I think it should be on top of the handle so as not to tire the fingers; but if you have a *flat* handle put on right, of the right proportions, there will be little to be desired.

Chatham, Ont., Can. W. A. CHRYSLER.

[Many men of many minds. What suits one does not another, All people can not be persuaded to wear the same style of shoe;

and the same is true of honey-knives, and, in fact, any other tool offered to bee-keepers in supply catalogs.

It is our opinion that most of our American readers will take issue with Mr. Chrysler on the shape of the blade of the honey-knife. When Mr. D. A. Jones first introduced this wide bevel, many years ago, the question received some discussion. Mr. Bingham argued that the narrow bevel, such as he adopted in his knife, caused less cohesion or suction to the comb—less in proportion as his narrow bevel was narrower than the Jones wide bevel, and in that proportion less of muscular strength. We are aware of the fact that many bee-keepers have tried the Jones knife, and discarded it in favor of the Bingham. It may be true that some users of the regular Bingham, after trying the Jones, preferred the wide-bevel form.

The buzz-saw argument need hardly apply, it seems to us, for the reason that the chisel edge of the Bingham should be held exactly flat on the comb surface. If so, the heel will not be higher than the rest of the bevel surface. But this narrow surface may be more difficult to hold in line than a knife with a wider surface. We don't know.

There, are, doubtless, a good many readers who have tried the two styles of knives and made a comparative test. It is these people from whom we should like to hear. Give us a brief note telling us of your experience, without fear or favor. Supply-manufacturers can make the one form as cheaply as the other, and they, as well as the general bee-keeping public, would like to know which is the better.—ED.]

### AN ENTRANCE-CONTRACTOR; TAR PAPER FOR AN ALIGHTING-BOARD.

The drawing here given shows my entrance-regulating cleat. This is notched as shown, to give the two different sizes of entrances. I simply lay this stick on the bottom-board, close to the hive-body. The wind never blows them away, and they are always easily adjusted.

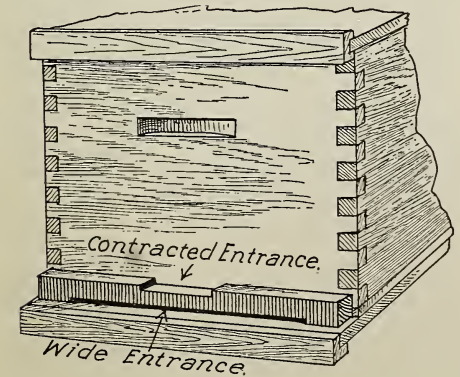



FIG. 1.

Fig. 2 shows my paper alighting-board. Spring clothespins are handy to fasten the paper to the bottom-board. I use 2-ply roofing-paper, painted white on the upper side. This will keep out the rain and keep the alighting-board (or, rather, paper) from getting so hot by the sun's rays that it might warp and get out of shape.

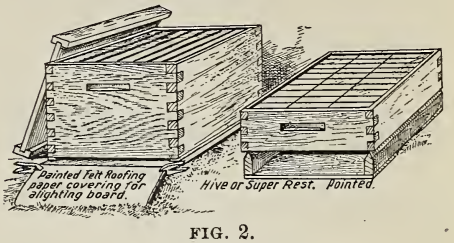



FIG. 2.

The hive-rest as illustrated makes a very convenient place to set upper stories or supers, when looking through a colony. The sharp edges afford but a small amount of contact, so the killing of bees is reduced to a minimum. The supers may be set down cornerwise or straight, without danger.

Wickliffe, O. W. C. SORTER.

### SWEET CLOVER ON CULTIVATED LAND.

With your experience with honey-plants, would it pay the time and expense to cultivate the Bokhara or sweet clover as a honey-plant? Where there are a few plants by the roadside the bees are busy; but do they get much nectar? or how long does it last? is the point. Will you give us some light on the subject? JOHN SHEFFER.

Auburn, Ind.

[The Bokhara clover is not cultivated to any extent in this country as yet, though it deserves to be. As a bee-plant, few flowers excel it. It is a very good plant for renewing the fertility of worn-out misused farming land, for it will grow where other clovers refuse to grow at all. It is good for planting along railway cuts and embankments to prevent washing of the soil. It contains a large amount of cumarin as a substitute for vanilla. If the new pure-food law bars the artificial vanilla, there is some chance of the Bokhara clover being grown for cumarin as a substitute for real vanilla, which is too high in price except for rich folks.—W. K. M.]

### ANTS; PETROLEUM TO PREVENT THEM FROM GETTING INTO HIVES.

I often see in GLEANINGS accounts of troublesome ants in some parts of the world—so much so as to make bee-keeping a hard job. My honey-house was visited by ants, and I painted the stone underpinnings with petroleum. The thickest and most worthless is the best. For hives, paint the standards or legs and let the alighting-boards be about two inches from the ground—a jump that the bees will make easily, but which will prevent the ants from entering. They will climb up weeds or any old thing to get in.

We are bothered by ants in the house pantry, getting into sugar and cake and pies. I take a square board and put four two-inch screws in the corners for legs, then paint the under side of the board and the screws. Jars and boxes may be set on the board, but they must be away from the wall so that the ants can't climb up and get in that way.

Corydon, Pa. GEO. WHITCOMB.


POULTRY-RAISING INDOORS AND OUTDOORS.

While writing up my experiments on my Florida island, I told you I had decided to visit some of the large poultry establishments. The first one I ran across on my trip was in the suburbs of Tampa, Florida. This is four miles out on a trolley line. As you near the place a large bulletin-board very tastily gotten up tells you this is "Stuart's Tampa Bay Poultry Farm." Right along the side of the car-track are specimens of their fine poultry, with nothing but poultry-netting to cut them off from the car-track. From the side of the hill that slopes down from the car-track to the bay are baby chicks by the hundreds if not thousands. The proprietors have evidently decided very much as I did, that the *mother-hen* is ahead of any brooder yet devised; therefore their chicks are nearly all in charge of a hen, each hen being allowed from 30 to 40 chickens. Unless given considerable room there are likely to be "differences" between the different mothers; and one mother-hen that was part game had already been guilty of killing chickens that belonged to some other hen; so we may have to go a little slow on the "fighting-mother" business.

The mothers with very small chicks are kept by themselves, and protected by wire-netting of only one-inch mesh. Any thing larger will let baby chicks get through, and they sometimes get stuck in the meshes, especially if you undertake to use the 1¼ or 1½ mesh.

This establishment has the nicest watering-arrangement I have ever seen. They have their own waterworks, and the water is carried everywhere in pipes. Well, these pipes are so arranged that water is constantly dropping slowly into a little cup elevated above the ground as much as possible and yet give the little chicks a chance to drink. Dropping water means pure water and clean drinking-utensils. It is exactly on the plan I told you about a year ago, of letting the water drop from my barrelful of rain-water into a clamshell.

In the beautiful climate about Tampa, little or no shelter is needed. In fact, I am not sure that every mother-hen has a shelter to get under during a severe rainstorm; and I know by experience that there is seldom any trouble with a hen and chickens in that region, even during a storm. Perhaps it would be safer, however, to have a hen and flock of chickens placed where they will be pretty sure to find shelter in case of a sudden and severe storm.

Well, while this establishment runs a dozen or more incubators they also make use of sitting hens for hatching eggs. Each hen with her nest of eggs is enclosed in a little yard containing water, feed, and a dusting-place, on the plan of the "natural-hen incubator" that I wrote about a while ago. This poultry-farm has twenty different varieties of fowls, all, of course, in that many different yards. At the Florida State fair last fall their stock won 80 prizes. They agreed with me that it was desirable to have every thing out of doors as much as possible, not only to keep the fowls healthy, but to get rid of every thing that can foster vermin and disease. They have settled down on dry mash for a feed, like most other large establishments of the present day, if I am correct. Their feeding-apparatus is so simple that I will describe it here. Get a shallow box at the grocery, of any convenient size, not over three or four inches deep. Fill the box half full or more with the dry mash; then, to prevent the hen from getting in and scratching it to the four winds, a piece of poultry-netting with a 1-inch mesh is dropped on top of the feed. For convenience in handling this piece of netting, a strip of wood is tacked across each end. The hens can reach down through and pick up the feed, but they can not scratch it.

To prevent their droppings from getting into the feed this box is pushed under a shelf or nest-box in the building. Of course, there is a space over the top of the box for hens to reach over. If used in the open air, a little roof is put over the box, of sufficient slope so the fowls can not sit on top of it. This roof is supported on legs or posts high enough for the hens to get their heads under.

As I was curious to know about the grains used for their dry mash, the superintendent kindly furnished me the following formula:

*Mr. Root:*—I promised you my dry-mash mixture, which is as follows: Wheat bran, 22 lbs.; wheat shorts, 17 lbs.; clover or alfalfa meal, 18 lbs.; feed meal, 17 lbs.; granulated milk, 20 lbs.; salt, ¼ lb.; blood meal, ¼ lb.; cotton-seed meal, 1 lb.; charcoal, 2 lbs.; fine bone, 2 lbs. Total, 100 lbs.

Tampa, Fla., Mar. 23. GEO. L. CLEMENS.*

Perhaps I might mention that, at different times in my life, I have been deterred from keeping poultry because the premises are generally sure to become untidy and foul-smelling; but it was one of my happy surprises to find that this great poultry establishment was so nicely managed that there was almost nothing offensive either to the eye or nostril anywhere on the premises.

* Mr. Clemens is also superintendent as well as secretary and treasurer of the Florida State Poultry Association.

When I arrived in New York I told the Cyphers people that I should like to visit some of the largest and most up-to-date establishments in that vicinity. I visited two of them. As they are managed so much alike, one description will suffice, perhaps—that of the one at Locust Valley, Long Island. Perhaps you might care to know that this is only four miles from Oyster Bay, the summer home of our esteemed President. Before I reached Locust Valley I saw the long rows of poultry-houses stretching far out in the distance. The establishment is called the Weir Poultry Farm. There are two houses, each 500 feet long, for laying hens; and there are now about 3500 laying hens there, mostly White Leghorns. They hatch each season from 25,000 to 30,000 chickens. From 40 to 50 hens occupy a room where they lay eggs for the market. There are breeding-pens, however, where the eggs are produced for the incubators, of only 10 or 15 hens to the male bird. There is no need of going through a 500-foot house, for each room is exactly like every other room.

The problem of taking care of the manure in this great establishment is accomplished very simply. The floors are all of cement. Under the roosts they spread a kind of peat moss that is much used in the vicinity of New York for horse-stables. This dry moss is a great absorbent. The hens scratch it over every day, and almost immediately in the morning after getting down from the roost. This mixes the manure with the dry peat so as to get rid of every thing that would be offensive to either sight or smell; and Mr. Weir informs me that, if the houses are cleaned once a month, the thing can be kept in good shape. This is a great saving in time over the shelf arrangement. The roosting-poles are movable, and, if I am correct, they are dipped in a trough of kerosene often enough to banish and keep out vermin. The nests are made of long boxes with loose top and bottom, so that every thing that goes to make up the nest can be quickly cleansed from vermin, the straw removed in an instant, and replaced with new and fresh material.

Now, I should be glad to report that these chicks hatched and brought up under the influence of artificial heat were as bright and happy as those raised in the Florida climate outdoors, or like mine that I suppose are *still* happy and bright down in the island, scratching and singing, and praising God every day. Perhaps I am drawing on my imagination a little in regard to the latter part of the statement; but I know those dear little chicks of mine—yes, young and old—feel thankful to *somebody* for their happy busy lives; and I think I am excusable for taking it for granted they are thanking their Creator and our Creator.

The eggs of those large establishments furnished for table use are sold to hotels in and about New York. The eggs are stamped with the date on which they are laid; and the extra prices they get for their fresh eggs are secured only by their reputation for strict honesty in the use of the rubber dating-stamp.

Now, these people who run establishments costing ever so many thousand dollars know their business better than I do; but I can not help believing that they would have brighter, handsomer, and healthier chicks if they tried *still harder* to give them more open air, and heat from the sun, instead of artificial heat, and air to breathe that is more or less confined. Of course, it would not do to let the March breezes blow right on to very young chicks; but I would let it in through curtains of cotton cloth or burlap, or something of the kind, and give them God's air and sunshine whenever it can be possibly managed. And while I am saying this in regard to the care of chickens, I feel every day more and more sure that the same thing is needed for human beings. I am continually impressed with the fact that we are more and more alike in our needs—especially in regard to the good we get by having plenty of outdoor air.

Now, instead of making my travels a record all of poultry, I want to digress a little. My son-in-law in New York, Mr. Boyden, said, as I was planning my visit to the poultry-farm, "Why, father, you are going right past Floral Park, where John Lewis Childs holds forth. You certainly want to stop and see him," and I did stop. First I visited the establishment of Miss Mary Martin, also of Floral Park. You may remember I mentioned her name about a year ago in connection with jadoo fiber. She is at the present time the only seed-dealer or florist I know of who imports this material for potting-soil and offers it for sale. Let me add right here that I could not succeed in growing greenhouse-plants in Florida to my satisfaction until I got a bag of jadoo fiber, adding ten per cent of it to my potting-soil. After doing this, every thing succeeded clear up to my highest expectations, even in Florida. While Miss Martin has not a large establishment, it is certainly a busy place. As my time was limited I did not go through the greenhouses very much. I said in parting, "Miss Martin, I had a particular object in view in making you even this brief visit. I am told there are a good many *women* florists in our land who are such only on paper." As I paused she finished the sentence for me.

"Mr. Root, you mean that *some* of them do not exist at all except in the catalog. Well, you are satisfied now, I suppose, that *I* do exist." I wonder if Miss Martin will excuse me if I say that, when I first met her, especially before she remembered A. I. Root, with whom she had had some pleasant correspondence a year ago, I did not take her to be particularly sociable in her disposition; but when she found out that an old friend, instead of some unknown stranger, was there, her face lighted up with a genial and pleasant smile that made me really sorry my visit would have to be so brief.

When I commenced going through John Lewis Childs' greenhouses I was impressed at once by the fact that every bit of his stock,

even that in the out-of-the-way corners, was first-class and in tiptop condition. As it was just before Easter, everybody was so busy they asked me if I would not just look around myself and go anywhere I wished.

After I had been through the rows of long greenhouses where they put up stock to fill orders, some one remarked that I must be sure to visit Mr. Childs' private greenhouses before I went away. As I came near one of them an elderly gentleman directed me where to go. I found a six or eight sided greenhouse with wings radiating out from it like the petals of a flower. The first one I looked into contained a bed of cinnerarias in pots. The blossoms were larger and more glittering in their wonderful beauty than any thing I had ever seen before. And then I remembered that Mr. Childs, in his new catalog, mentioned a new and superior strain of large or giant cinnerarias. There was no mistake about the catalog. This bed eclipsed any thing I had ever seen, by all odds. I went clear around and then came out and started in to the next similar greenhouse. I was all alone—nobody seemed near, and there was nothing to hinder my talking out loud or *praying* out loud. I lifted my cap from my head in token of the reverence I felt for the sight that met my eye. I said, "May God be praised that I have been permitted to live long enough to see the sight that now greets my eyes."

A lot of plants of what I took to be something with tropical ornamental foliage were scattered about in pots. From the descriptions I had seen in floral books, I supposed they were some high-priced things like orchids. While I was looking and thinking if it was not wicked, if I would gladly pay a lot of money for some of these wonderful creations, the elderly gentleman I have mentioned stood in the door. I said, "My good friend, will you please tell me the name of these wonderful plants with such gorgeous leaves?"

"Why, those are our new creations that have been recently developed from our ordinary caladiums."

"Caladiums!" I exclaimed. "Why, is it possible that these are caladiums? and are they hardy?"

"Hardy? Why, surely. Don't you see the ventilators are wide open? The temperature is between 60 and 70."

"But where did these come from? How long has Mr. Childs had them?

"Why, we have been developing along this line for two or three years past. Some of the finest have just been brought out. You are right about it. Nobody ever saw them until this season. Have you not seen Mr. Childs' description and his colored plates of them?"

Then he opened a catalog. You may be sure we soon became acquainted. My companion, Mr. Adolph Jaenicke, is the specialist who has the credit of giving these beautiful things to the world. I began asking the prices, and was rejoiced to know that I could have small plants of nearly all of them for 25 cents each. There were quite a few, however, that were new and rare, and somewhat difficult to propagate, that he said were not for sale—no, not even for $50 a plant, and it might have been $500—I do not remember. Let me digress a little.

At the recent great poultry show in New York they had a $1000 rooster; and when some people laughed about the price, the owner said he had already taken orders for cockerels, at $25 each, that would more than pay for the bird if he lived. Now, I am not well enough posted in poultry to say whether a bird could be worth $1000 or not; but I can readily understand how a man who has a monopoly of these wonderful foliage plants might pay $50 or even $500 for the control of the stock of something that will give the world such a treat.

Perhaps I had better try to describe some of these caladiums. One that took my attention first had a background of milky whiteness; but the veins formed a beautiful network or linework of jetty black. Then there were touches of gold and silver, and dazzling shades of green. I have sometimes explained to the children that it was God's own hand, or, if you choose, God's own *fingers* that painted the lilies. Well, this friend of mine—I have a right to call him a friend—has been for years feeling his way along, and seeing what he could do in making a new creation of ornamental-leaved caladiums. He explained that some of the plants in his charge blossom only in the night—some of them just about midnight, and the flowers stay open only a little while—a limited number of minutes. In order to secure the highly prized pollen he was obliged to sit up and watch the flowers unfold. He must handle the plant, not only just at such a time, but in just such a way, in order to encourage and develop these beautiful forms. I told him that he was a rival of Luther Burbank; and he seemed greatly pleased to find somebody who could appreciate and drink in beauty that he had, through God's providence, been able to unfold to the world. I suppose I am giving friend Childs a big free advertisement here; but I can not help it. It is only once in a while that I find something that gives me such a thrill as did this display. I did not see Mr. Childs at all—in fact, I have never seen him. Although I have written up the things he has sent out several times in years past he has never made me a present of five cents' worth of plants or seeds, and I am glad of it. If he had, I should not have felt like writing as I have in the above. By the way, I ordered about a dozen small caladium plants from such varieties as were for sale, and I will tell you more about them when I get them in my little greenhouse.

In Philadelphia I went over the great greenhouses of Robert Craig & Son. It took about an hour to walk through them. They were busy in putting up azaleas, Easter lilies, etc., for the coming Easter Sunday. The display of azaleas was beyond any thing I ever saw before. As I approached a group of men who were loading up the beautiful plants in

different kinds of vehicles for shipment I said, "Friends, I hope you are a happy lot of men—you ought to be."

I smiled as I said it. One of them asked why *they* should be particularly happy. I said, "Because it ought to make any man happy to have so much beauty all around on every hand, and I hope you appreciate it."

"Well, stranger, I believe we are, as a rule, tolerably happy, and thankful too; but Jim there is the happiest man in the lot, for he belongs to the Salvation Army."

"Yes," piped in another, "Jim does belong to the Salvation Army; but, although it is not very long since he joined, he is already a 'leftenant.'"

Then they began making jokes at poor Jim. One said, "Yes, they put him in 'leftenant' so he could handle the money; and I guess it is that part of it that makes him *particularly* happy."

Jim's face began to color up, notwithstanding he had recently joined the Salvation Army. His temper was aroused. I saw it, and began to feel anxious. I said, "Jim, I am very glad to know that there is at least one man who has united with the Salvation Army. I hope there are more of you, and that you will not be afraid to show your colors, even though they do try to run on you." But before I could stem the current poor Jim got mad, and swore at his tormentors. It made me think of poor Peter when the damsel said, "This man also was with him."

As my time was very limited—in fact, I had to catch a train where Mrs. Root was to meet me—I did not find out poor Jim's name; but I could only pray that the Holy Spirit would prompt him to stand up at the "barracks" in Philadelphia at the first opportunity, and confess to his comrades how he had been tempted and had fallen, and ask the dear Lord and Savior to forgive him for his want of courage to hold the fort at a critical time.

On page 1595 of last year I said I would try to visit the locality near Philadelphia where mushroom-growing was such a great success. Through the kindness of Mr. H. P. Fawcett, of Brandywine Summit, I spent an hour or two in looking over the mushroom-growers. The first one was where they were grown under the greenhouse-beds. The firm of Harvey & Sons makes a specialty of carnations, and they have some of the finest up-to-date glass and steel structures it has ever been my fortune to visit. A little incident of recent occurrence particularly interested me. Lord & Burnham, the celebrated greenhouse-builders, furnished them the material, drawings, specifications, etc., for a large up-to-date greenhouse. I have forgotten the dimensions, but it was an immense affair. Harvey & Sons decided they could put up the buildings themselves if Lord & Burnham would furnish the materials. They did so; but during one of the recent heavy snowstorms the weight of the snow broke the house down. The loss on the house and contents was something like $2000. As they put up the building themselves, they supposed the Lord & Burnham people would not consider themselves responsible. But it was one of their happy surprises when this great company looked the thing over and decided to *make good* the entire loss, because the engineer who had furnished specifications for material to be used had made an error. I mention this because I am glad to say a word for a worthy manufacturing firm.

The mushroom houses, or caves, that pleased me most were cheap wooden structures covering a mushroom-bed placed on the ground, not unlike beds in an ordinary vegetable-garden. The roof is made double, and filled with shavings to keep out the frost. A boiler and hot-water pipes keep the temperature at about 50 or 60 degrees. About 56, I think, is the most successful for mushroom-growing. A successful bed will begin to furnish a crop after about five or six weeks, and the mushrooms may be gathered every day for a period of three or even four months. Both the American and European spawn are now on the market; but the European spawn shows a better yield than any thing grown in America.

Many of the structures are ordinary rough buildings, two or three stories high, including a basement. The mushroom-beds resemble an ordinary wagon-box, only they are very much longer—in fact, as long as the building. These boxes, or beds, are placed one above the other, with walks between them. The overhead walks are simply planks laid between the beds to walk on. The one who does the work will, by stooping over, handle two tiers of beds from one plank. The walls are packed with sawdust or shavings to retain heat. The heat is maintained by means of boilers and hot water in the pipes before described.

Although there are few if any entire failures, the industry is still more or less uncertain. Some beds go away ahead in yield of other similar beds; and it is as yet a hard matter to tell just why one bed does so much better than another one. Experts in the business, or perhaps I might say those who seem to have good luck, especially when prices are good, have several times sold enough mushrooms the first year to pay for the building and all the expense of the plant. Now, do not get the idea into your head, because of this statement, that *you* can get rich by growing mushrooms. May be you can, and may be you can not. From the fact that there are more mushrooms grown around the vicinity of Brandywine Summit—more, perhaps, than anywhere else in the United States—I am inclined to think the soil or climate, or something else, is particularly favorable for the industry in that locality. The prices received for the crop are all the way from 30 cents to $1.00 a pound. I have never learned that the price has gone lower than 30 cents, and several times it has gone as high as $1.25. At present, growers are getting from 35 to 40 cents. The greatest expense for material is for stable manure brought from the livery-barns in Philadelphia.

It is shipped out by the carload, and hauled to the farms where it is used. I confess I can not see any reason why the mushroom houses or caves can not be located near a railroad station to save transportation of the manure. The soil needed to grow the mushrooms that is placed over the manure is taken from the surface of the farming land near by. Any soil that will grow good crops of corn and potatoes seems to answer for mushrooms; and, if I am correct, a well-rotted clover sod answers about the best of any thing.

### THE STARVING PEOPLE IN CHINA AND TURKEY.

In our issue for March 15, by an accident the closing paragraph of my Home talk was omitted. It read:

"President Roosevelt has given $100 to the starving Chinese. How many in our United States of America are there who can do as well? The A. I. Root Co. has given $50.00. Why do not Rockefeller and Carnegie do something for the starving people? Does not that part of our text, 'Are ye not much better than they?' include the Chinese? Address all contributions to The China Famine Relief Fund under the direction of The Christian Herald, 402 to 409 Bible House, New York."

Since that time great sums of money have been forwarded in the care of careful missionaries; but we are told that the distress is still just as great as and perhaps even greater than before. Dear friends, if you wish to lay up for yourselves "treasures in heaven," I do not know of any better way. Please consider that, in a very brief time, we must *all* give up and lay down the wealth we have accumulated. Is there any better investment open to humanity than to relieve the starving? Few of us here in this land of ours have ever had even a taste or a touch of the pangs of hunger. Is it not high time, dear friends, that, with the great abundance there is all around most of us, there should not be a spot on the face of the earth where people can be found dying of starvation—especially innocent and helpless women and children? If you read the papers that are right before you, you can have an opportunity of knowing something about the terrible things that are constantly going on in these foreign climes, and through no fault of the people themselves who are the greatest sufferers. May God help us to be ready to give or deny ourselves, and that, too, with alacrity, that which we do not need, and that which we can not take with us when our mission in this world is finished.

Almost immediately after the above was dictated the following was put in my hands with the request that we give it a place in our first issue:

#### HOMELESS IN TWENTY-FIVE FEET OF SNOW.

An earthquake has left homeless the people and missionaries of Bitlis, Turkey. The poor people had not recovered from the massacre, and now, oppressed by the Turk, laden with unjust taxation, suffering famine through prices four times higher than usual, they are encamped in twenty-five feet of snow which will not melt before summer gives a chilly welcome to the poor. Immediate assistance is urgently requested by cable from Mr. W. W. Peet, of Constantinople, the treasurer of the American Mission. Those who have known of the heroic missionary and relief work of Rev. and Mrs. R. M. Cole, Miss Nellie Cole, and the Misses Charlotte and Mary Ely, will need no urging to lend a helping hand. Mr. Cole, a partial invalid from a fall received last year while on a tour to succor refugees in the Moush region, has bravely remained at his post waiting for reinforcements before leaving for America.

The Misses Ely, graduates of Mt. Holyoke, have built up a Mt. Holyoke in Bitlis amid the mountains of Kurdistan, often touring in the winter on snow-sleds among the villages where their pupils are working as teachers, Bible-readers, and pastors' wives. With their buildings and industries destroyed, what shall these missionaries do with the pupils and orphans whom they have sheltered and trained? How shall they aid the refugees crowding upon them for succor? Funds may be sent to Messrs. Brown Brothers & Co., 59 Wall St., New York, treasurers of the National Armenia and India Relief Association, and will be cabled.

In behalf of the suffering,
MISS EMILY C. WHEELER, Sec.
765 Main St., Worcester, Mass., April 4, 1907.

Permit me to add that we are well acquainted with the Brown Brothers mentioned in the above. They have for years past been forwarding sums to starving people in foreign lands by cable, and they are absolutely trustworthy in every respect.

### BASSWOOD SEEDS—GETTING THEM TO GERMINATE.

In spite of all the suggestions we have been having in regard to this matter, there still seems to be much difficulty. Several times I thought I had succeeded; but before I got the trees to growing nicely in nursery rows I had troubles of different kinds: At the present writing, my plan is to take up the seedlings that come up under the trees of their own accord, and plant them in very rich soil, using dirt that is made rich with old well-rotted manure. Under favorable circumstances we get trees three feet high the first season—that is, where the seeds come up in very rich ground and grow right along. Our old friend E. E. Hasty gives us some valuable suggestions as follows:

*Friend A. I. Root:*—I note in a recent GLEANINGS that you are trying to make basswood seeds come up. The government folks don't seem to be any too well posted themselves, though what they tell you is excellent so far as it goes.

The trouble seems to be that basswood appears deliberately to set about having its seeds come up the *second* year—at least a part of them. In the forest it would likely be an advantage to the species to have part of the seeds come up the first year and part the second. But when man undertakes to plant them (in his usual way) they *all* hold back. Then what with the weeds, and what with pulling the weeds, and what with careless hoeing, and what with the burrowing mice, the seeds all disappear—else perish altogether. I contrived a kink to get on nature's blind side, and it worked with me. *Plant the seeds before they are ripe.* Fully ripened seeds are ash gray in color, and, earlier, they are a lively green. Watch out right sharp. Let the contents of the seed get pretty well formed, but pick it off and plant it quite a bit before it begins to turn gray. It wouldn't be a bad plan to make two plantings a week apart.

I got about 40 per cent to come the first year by this method. Allowed to get fully ripe, seeds from the same tree, treated in the same way (except as above( none of them came—in fact, none of them ever came. I drenched the soil on planting, but did not shade the ground. No doubt partial shade would be a very great help, and additional waterings also.

E. E. HASTY.
Station B, Rural, Toledo, Ohio, Jan. 12

## Convention Notices.

A meeting of the Middlesex Bee-keepers' Association will be held at city hall, London, Ont., May 4, morning and afternoon sessions.

E. T. BAINARD, Sec.

The Minnesota Bee-keepers' Association's spring meeting will be held on Saturday, April 20, 1907, at the old State Capitol, St. Paul, Minn. The afternoon session will commence at 1 o'clock, and the evening session at 6. Free refreshments will be served from 5 to 6 by the lady members of the Association.

A leading feature of the afternoon session will be a practical demonstration of the modern method of queen-rearing by Mr. Chas. Mondeng; and at the evening session, of the simplest way to cure foul brood.

Papers will also be given on spring management, by Wm. McEwen; production of comb honey, by Chas. Blomquist; shipping bees and honey, by Mr. Gent, of Rockford, Minn.; bee-keeping in connection with farming, by Pres. H. V. Poore; bee-keeping for the beginner, by W. R. Ansell; paper, by Mrs. E. E. Merrill.

Questions on bee-keeping by any one interested will be fully discussed and answered.

Lay every thing aside and attend this meeting; you will never regret it. We want every one to come, whether a member or not. Brother and sister bee-keepers are all cordially invited.

CHAS. MONDENG, Secretary.


### THICK-TOP STAPLE-SPACED FRAMES.

We have at Philadelphia an overstock of thick-top staple-spaced frames with ends not pierced with wire, which we offer at $10.00 per case of 500; smaller lots at $2.25 per 100. If you can use any of these this is a bargain while they last. Send your orders direct to The A. I. Root Co., No. 10 Vine St., Philadelphia, Pa.

### SLOTTED SECTION-HOLDERS.

We have at Chicago several hundred slotted section-holders, nailed, which have been used and taken back in exchange for other style of fixtures. These new cost $2.00 per 100 in the flat. We offer these nailed, ready for use, packed for shipment at $1.25 per hundred, while they last. While they are somewhat stained with propolis from use they are a bargain at this price to any one needing this style of section-holders.

### FRAMES, ETC., AT OGDEN, UTAH.

We have in stock at Ogden, Utah, to dispose of, 300 thick-top staple-spaced frames at $2.50 per 100; 300 all-wood frames at $2.00 per 100; 2 No. 4 Novice extractors, at $8.50 each; 1 bee-tent at $1.75; 250 folding cartons for 4¼×1⅞ sections, $1.25; 1000 cartons, wrappers, labels, etc., for brick honey, at $10.00. These goods are offered free on board at Ogden at catalog prices as above, less 10 per cent discount for cash order before May 1 to close out the stock quick.

### WIRE POULTRY-NETTING.

We have in stock here at Medina some narrow poultry-netting which we will close out at less than cost as follows:

Seven rolls, 12 inches wide, 2-in. mesh, No. 19 wire, at 60 cts. per roll.

Five rolls, 18 inches wide, 2-in. mesh, No. 19 wire, at 90 cts. per roll.

Six rolls, 18 inches wide, 3-in. mesh, No. 18 wire, at 90 cts. per roll.

Five rolls, 24 inches wide, 3-in. mesh, No. 18 wire, at $1.20 per roll.

Eight rolls, 30 inches wide, 2 and 3 inch mesh, $1.50 per roll.

In ordering, send a second choice in case what you order may be taken already.

### BUSINESS OUTLOOK.

Prospects are bright in many localities, and trade is very brisk, judging from the orders received and the urgency for shipment. Our branches and agencies are pretty well supplied, but are crowding us for further shipments to such an extent that we are obliged to disappoint some in time of shipment. We can not get off more than five or six cars a week; and when from twelve to fifteen are wanted in a hurry, some have to wait. We advise all to anticipate their wants as far ahead as possible, because many things conspire to delay shipments. We never before experienced such difficulty in securing cars to load as we have this year.

## Special Notices by A. I. Root.

### WANTED—SEED OF THE CALIFORNIA MOUNTAIN SAGE.

If any of our California friends have any seed of this sage in stock, the kind that produces sage honey, we shall be glad to have them send us samples with prices. Or if they will undertake to gather seed for us the coming season, please let us know.

### MUSHROOM CELLARS AND BUILDINGS.

I omitted saying on page 573 that mushrooms are always grown in darkness or semi-darkness. Where grown underneath the beds in a greenhouse, a curtain of cotton cloth or burlap cuts off the light, and at the same time gives access by pushing it aside when working with the beds. I think, however, the best yields are in specially constructed cellars or buildings made perfectly dark.

### BASSWOOD-TREES FOR SPRING PLANTING.

Now is the very best time in the year to plant basswoods. We have at present only one size—1 to 5 feet tall. We are prepared to fill all orders as follows: One tree, 10 cents; 10, 75 cents; 100, $5 00. These are too large to be mailed, but we can pick out the smallest ones to be sent in that way. Ten trees, 40 cts. postpaid. The basswood is a very hardy tree; and where they are put out with reasonable care, either in the fall or spring, not one in ten should fail to grow.

### CONTRIBUTIONS FOR THE CHINA RELIEF FUND.

Just after the matter on page 574 was in type I thought fit to clip the following from the *Home Herald*, formerly the *Ram's Horn:*

DEPARTMENT OF STATE,
WASHINGTON, Feb. 1, 1907.

*Dear Dr. Klopsch:*

The President has asked me to say to you that he is much interested in your work to raise funds for the sufferers by the dreadful famine in China. He hopes that you will meet with the same success that you have had in similar appeals to the humanity and liberality of our people.

As a contribution to the fund he has handed me his check for $100, which I inclose, together with a similar check of my own. With best wishes I am

Very sincerely yours, ELIHU ROOT.

Dr. Louis Klopsch, *The Christian Herald*, New York.

### HELP OR THEY PERISH.

We urge upon every reader to join this life-saving crew, and to throw out to these starving people the life-line before it is too late. Pray that God's people everywhere may realize the importance and urgency of the case, and may willingly and cheerfully give, even as God has prospered them.

Young People's Societies, Epworth Leagues, Christian Endeavorers, work earnestly, for the night of death threatens to enshroud a continent. You can give the clouds a silver lining, and you will do it. This is the King's business. It requires haste. Every day's delay may prove fatal. Let us, then, be up and doing. He that sitteth in the heavens watches. His eye is upon us. What we do, let us do it as unto him, and he that seeth in secret and rewardeth openly will bless us with an everlasting blessing.

### THE DAUGHTERS OF THE KING.

There are in every community godly women, sympathetic and kind—consecrated women who long to do good, as they have opportunity, and to aid the poor, the suffering, and the distressed. We look confidently to them for aid at this time. They can work, they can speak, they can plead, pray, and give. May God call them to this mission, and graciously prosper the work of their hearts and their hands.